

Vol. VII

JULY, 1921

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**Oral Surgery**

*A Monthly Journal Devoted to the Advancement of the Sciences  
of Orthodontia, Oral Surgery, and Dental and Oral Radiography*

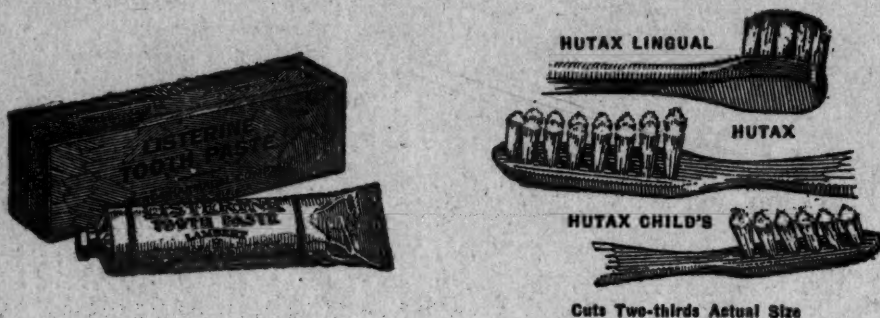
**Martin Dewey, D.D.S., M.D., New York**  
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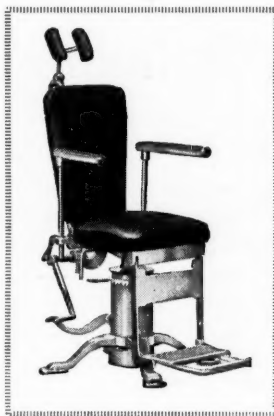
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# International Journal of Orthodontia and Oral Surgery

A Monthly Journal Devoted to the Science of Orthodontia, Including  
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# The International Journal of Orthodontia and Oral Surgery

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VOL. VII

ST. LOUIS, JULY, 1921

No. 7

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## ORIGINAL ARTICLES

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### ETHICAL RELATIONS IN CONDUCTING AN ORTHODONTIC PRACTICE\*

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BY J. LOWE YOUNG, D.D.S., NEW YORK CITY

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ACCORDING to custom it becomes my privilege to address you as president of this society. As we have a full and important program, I wish to make my remarks as brief as possible so there may be ample time for full discussion of all papers.

I wish to express my appreciation for being honored with the presidency of this society and to thank the board of censors and the secretary-treasurer for their splendid work in preparing the program for the meeting. I wish also to thank the society as a whole for its cooperation in arranging the program, for without this splendid assistance the board of censors would have been unable to present such a program as you have before you.

It is not my purpose to review the orthodontic literature of the past year, but rather to discuss with you some ideas on conducting a practice of orthodontia.

I am taking up this question with the hope that there will be a full discussion of the question and I hope there will be no hesitancy in expressing differences of opinion. It is not to be considered a personal matter if any or all of you differ with the views expressed here and it should always be the privilege of each member of the society to frankly express his views with no thought of it being in the nature of a personal attack.

As a specialist in dentistry, the orthodontist naturally expects patients to be referred to him from various sources such as the dentist, the physician, the satisfied patient, and other orthodontists. It is, therefore, desirable to discuss the question under three heads.

Our duty to the dentist  
Our duty to the orthodontist  
Our duty to the patient

---

\*President's address before the Twentieth Annual Meeting of the American Society of Orthodontists, Atlantic City, N. J., April 27-30, 1921.

## OUR DUTY TO THE DENTIST

The conscientious dentist, conducting a family practice, who desires to refer a patient to an untried orthodontist may naturally wish to determine to his own satisfaction, whether the orthodontist in his efforts meets his expectations. It has therefore been thought advisable never to assume, when such a reference is made, that the whole family, if there should be more than one child, is included in the reference. The orthodontist may logically think "Why doesn't Dr. A. ask me to look at the second child, who is six years of age?" Now it is quite possible that Dr. A. is well aware that the child of six requires orthodontic treatment, but that it is best to wait for a year or two until the older child has been treated, and then if the work is found to be satisfactory, there is still time left to take care of the younger child. In such cases I have considered it good practice to confer with the dentist who refers the case and find out what his views are on the subject, never assuming that where one child is referred the entire family is included.

## OUR DUTY TO THE ORTHODONTIST

It is not to be supposed that the orthodontist can please all patients referred to him or all patients under treatment. The question therefore comes up occasionally as to what is the proper policy to follow when a patient under treatment by another orthodontist or dentist comes in desiring an opinion.

Before discussing this question in detail permit me to say that it is not advisable that the word of the patient, no matter how reliable he may be, should be taken against that of the practitioner, for it is not infrequent, when misunderstandings arise between the patient and the professional man, that the patient gets the wrong impression or wrong point of view.

It has been my belief that the orthodontist so consulted should not express an opinion of the work done by another man when appliances are in the mouth, in the absence of the man who has the case under treatment. There are many things which enter into this question which make it a delicate one, but I believe the outline given below in connection with such cases, is the best for all concerned.

The patient, when found to be wearing an appliance, is dismissed from the room, and the parent informed that owing to the fact that the child is under treatment by some one else, it is not advisable to discuss the case in the absence of the man who is doing the work. The parent may reply "I have finished with this other man." Now, I am supposing that the other man's name is a secret. In fact, I do not believe it advisable to inquire who the other man is.

My answer has always been "It is only fair for you to return to the man who has been treating the case and frankly tell him that you have decided not to have further treatment by him and ask that he remove his appliances and if he does not wish to do so, ask him to write a statement to that effect and that he has discontinued the case and is willing that you should have some one else continue the case with his appliances." If the parent refuses to

do this, I proceed as follows: "If you will be kind enough to give me the name of the person who has been treating the case I will confer with him and see if satisfactory arrangements can be made." If this request is refused, I decline to have anything to do with the case.

It has always been my custom in such cases to try to get the original models of the case but this as a rule is a very difficult thing to do. It is my custom, whenever patients wish to discontinue treatment, to supply the parents with the casts and radiograms so that the child may derive the most benefit when placed in the hands of another orthodontist.

As the treatment of cases in orthodontia extends over a period of years, it is often necessary to refer patients to orthodontists in various sections of the country for attention during temporary absence and here it seems to me is where many of us are remiss in the conducting of our cases.

It has been my custom when patients remove to another city temporarily, to write the orthodontist to whom the case is referred, explaining at some length what we are hoping to accomplish and the cooperation which we expect from him, while the patient is under his care.

Some of you may take issue with this view, feeling that the orthodontist to whom the patient is referred should be equally capable of caring for the case, but right here comes in the question of responsibility which is a very large factor in the treatment of cases of malocclusion. I do not feel it is advisable to shirk responsibility of the final outcome of a case which has been absent for a few months, neither do I wish to assume the responsibility for the teeth of a patient who has absented himself from my care, so I therefore think it advisable, in all such cases, to refer the patient to the orthodontist in the city where the patient is sojourning, and in such cases the orthodontist who is looking after the patient should have practically little or no responsibility in the case other than to follow the instructions given him.

Where patients remove permanently to another city it has been my custom to refer them to the orthodontist I feel is best qualified to look after the case, giving the patient or parent all the data I have on the case and writing the orthodontist to whom the case is referred, stating that the patient has permanently left my hands and telling him he is perfectly free to go on with the case, using my appliances if he so desires, or if he thinks it best to change the appliances, he is at perfect liberty to do so. Then I consider my responsibility in the case at an end.

I have heard of orthodontists starting cases that they knew were to remove in a few months to another city and then refer them to another for treatment and thus be relieved of all responsibility of the case. To this I am absolutely opposed. It is my custom to explain to the parent before beginning treatment how long it is liable to take to finish the case.

#### OUR DUTY TO THE PATIENT

In all professional work the welfare of the patient should be uppermost in our minds and this applies more to the specialist in orthodontia than possibly to any other branch of the dental profession at the present time.

Orthodontia, as a specialty, is but a couple of decades old, and it behooves



each and every one of us to be most conscientious in serving our clients, so as not to degrade the high standard that was set for us in the beginning by the founders of this society. We all know that it is a very exacting practice to engage in and it is only by paying attention to the minutest details and conscientiously striving to establish, as nearly as possible, the normal arrangement of teeth that we, as specialists, can hope to maintain this standard.

Specialists are consulted because they have had special training along certain lines which should enable them to render services not obtainable from the general practitioner. Parents who have put their children in the hands of the specialist have a right to expect that they receive expert, honest and conscientious treatment, and that nothing will be left undone for the welfare of their children.

If you find these thoughts worthy of your consideration, I hope there will be a full and free discussion.

Before I close may I impress upon all members the necessity for promptness, that there may be sufficient time for all discussions.

#### DISCUSSION

*Dr. John V. Mershon, Philadelphia*, was asked to open the discussion. He said: This is somewhat of a surprise to me. I was unfortunately out of the room and did not hear the former part of the president's address. I can only say that inasmuch as the latter part of his address dealt with the handling of children, in which they are referred from one city to another, I most heartily concur with his views. We have all probably gone through the experience of having patients sent to us from other cities with appliances just made, and placing us in a very embarrassing position. There is possibly no way of handling that case without making an uncomfortable situation. I must say, I think we take too lightly the question of the responsibility of these children when they come to us from other orthodontists.

I also agree with Dr. Young that when a patient is under treatment and is spending a few months usually at school in another city, the man to whom that patient is referred should only follow the directions of the orthodontist who has the case in charge.

I am sorry that I did not arrive earlier to hear the whole of Dr. Young's address. I know it was very good.

*Dr. Oliver Wilson White, Detroit, Michigan*.—One of the most important subjects that Dr. Young touched upon in his address, is the responsibility involved in those cases where the orthodontist finds it necessary to temporarily or permanently refer his patients for treatment to some other member of the profession.

A very frank understanding between yourself and patient as well as a definite division of responsibility should be arranged, in order to avoid any unpleasant discussions later.

Accurate data in relation to when the patient leaves or returns should be noted with proper study models for records.

I heartily agree with Dr. Young in everything he has said on this subject. The subject is a very interesting one, and should be discussed freely.

*Dr. C. A. Hawley, Washington, D. C.*—I think this is a very important subject and one that should be well understood. There are a good many points involved in the handling of transferred patients that may inadvertently give trouble. I remember in my early practice this question became very annoying. I recall very well that when I had to treat patients that had been referred to me and I was expected to finish out the contract made by the other man, the situation was often unsatisfactory. In later years, whenever a patient is going to leave and I know it, I finish up completely my transaction with him, so that all financial obligations with me are ended. I tell him that he must make new arrangements with the man to whom he is going and, it seems to me, the easiest way for the new man is to intimate to the patient that possibly he may wish to change the appliance; that very often appliances are changed,

and every man has his little individual ways with which he can succeed best with a patient. That makes it easy to do so without discrediting you or leading the patient to think that the change is made unnecessarily. All of us have little different ways of doing things, and for the benefit of the patient, let a man have his own way in caring for the case. From that time on the patient is his with full responsibility. I find patients appreciate the fact when each man is treated with courtesy and with kindness.

I think the outline laid down by the president in the matter of consultation is excellent and is one we should all follow. I could not improve upon the suggestions he has made. We are led into difficult situations sometimes from consultation with patients. They become dissatisfied in some way and walk into one's office and immediately want to criticize some other man's work. That leads us into a dangerous situation very often, and the outline laid down by Dr. Young is a safe one.

*Dr. B. E. Lischer, St. Louis.*—The president's address takes up a very timely topic and, it seems to me, has expressed it very tersely. It is a discussion of certain ethical relations which have been too long neglected. I have had the experience that when a patient suddenly changed residence and had to be referred to an orthodontist in some other city she was told that the appliances I had used were "out of date." Now the question of the efficiency of any appliance is, after all, a relative one. It is a matter of what one is able to use. I, for one, am willing to admit that many men accomplish good results with methods I would not employ, because I am not accustomed to the appliances they prefer. And this only proves that our methods are not standardized; and until they are it is idle to criticize the other man's method. When a patient is referred from one man to another and a change of appliances is imperative, a more courteous excuse can readily be found than to say that "his appliance is out of date." As long as an appliance measures up to certain fundamental requirements which are based upon the pathology and diagnosis in each case, it is beyond censor. There is no one, best method of treatment for any malocclusion.

I never knowingly start treatment of a case that will have to be transferred shortly thereafter. It is always better to advise postponement in such instances until the change of address has occurred.

I have often been amused at the attitude laymen usually assume when ethical principles are discussed in their presence. They are very prone to laugh at professional codes; but this is always due to ignorance. It is certainly very commendable to the professions that they are constantly striving to raise the ethical status of professional relationships. And it is the more commendable because it is voluntary. Sooner or later we will have to deal with this subject in a comprehensive and practical manner, because in the last analysis every relation in life has its ethical aspect. Ignoring this fact does not solve the abuses of life.

"The law of the wild things of the world is that their life thrives at the expense of other life. The spiritual law is that life develops its highest potency in the act of kindling truest life in others. The baser, cruel law still prevails in human society. Like all others we are subject to it. The tragedy of existence is that unwittingly we do harm to our fellows. Yet from the grasp of this law we must unceasingly seek to extricate ourselves, guided by the vision of better and best relations, which itself gradually becomes more distinct as we emerge from the evil relations." (Adler.)

*Dr. Guy G. Hume, Toronto, Canada.*—I do not wish to repeat what has just been said, as I agree with the different points embodied in the president's address, but there is one part I would like to discuss and that is the rights of the patient.

What I am about to say does not come from any personal experience but I have heard of cases in which the patients have requested the advice of some other orthodontist and they have been practically denied that privilege. I think that is a phase from the standpoint of ethics we should consider. We should consider a patient's standpoint as to his or her rights in regard to consulting some one else. We all make mistakes in judgment, and our patients should not suffer on account of them.

The subject of ethics brings up the question as to what standards we have in our society or by what code of ethics do we abide. The only written form I know of is that there shall not be any fee paid in connection with a case that is referred to one of our members. It is a big question we have to discuss in connection with ethics, and I do not

feel capable of expressing it, just as I would wish, but I think some action should be taken in the society, for instance, in formulating and in having some standard to which we should look as members of this society.

*Dr. Lloyd S. Lourie, Chicago.*—I remarked to some of my friends this morning that if ever I wished I might have the power of expressing myself clearly and forcibly, it was this morning, in regard to the questions brought up by Dr. Young in his address.

With all due respect to the men who are to appear upon the rest of the program, I want to say that I feel that the matters which ought to be discussed in connection with Dr. Young's address are more important than the rest of the program put together.

In the greater part of the remarks that have been made on this address, the importance of having right relations between the operator, the other orthodontist, and the dentist has been emphasized. I am glad our President made the statement that it is very important that we consider the rights of the patient, but unfortunately, Dr. Young, possibly with the intention of making a climax to the point of importance, considered first our relation to the dentist, next our relation to the orthodontist, and finally our relation to the patient. Now, it is my opinion that our specialty, as well as the professions of medicine and dentistry, has no ground for existence unless it is the good that is to be done the patient. It is not a money making scheme. Dental laws are passed with the idea ostensibly of protecting the public and patients and furthering their interests, and I think the sooner we come to a clear understanding and appreciate the fact that the interests of a patient are of more importance than those of any orthodontist or dentist connected with the case, the better it will be for our specialty.

As Dr. Hume has pointed out, it would be a very valuable thing if we could bring it before the Society, and we ought to consider it. If we can in some way arrive at what would be considered the best practice, ethically speaking, under various trying conditions that may arise, some of which have been referred to by Dr. Young, it would help us very materially. Some of these situations are extremely delicate and are modified greatly by conditions in the individual case, so that I think it would be very hard to lay down a rule that whenever a case comes to you from somebody else you are to follow a certain line of procedure. It makes a great difference, for instance, whether there is a quarrel between the patient and the orthodontist. It is quite conceivable, and you will all admit it, that there may be incompatibility of temperament between the operator and the individual, and, as Dr. Young has pointed out, no man can please everybody, nor can he be expected to, and he ought not to be criticised if he fails to get results in every case. If a patient has had a serious disagreement with an orthodontist, for instance, I think it is hardly fair to insist the patient shall go back and have further dealings with that man. The patient feels very strongly that he has been grossly mistreated, though Dr. Young says that not infrequently the patient has a misconception of the situation. I want to say, that frequently the patient has a very accurate knowledge of the situation, and very often the orthodontist has grossly abused the patient. Are we, on account of some mistaken idea of a code of ethics, to deny that patient the right of such information as we might be able to give him or her to help straighten out the situation? I have been considering this subject quite seriously for a long time.

A year ago Dr. Young mentioned it to me, and at that time I cited certain cases which had occurred in my practice, the nature of which was very different from the ones mentioned by him.

Dr. Young has mentioned the matter of a patient going from one orthodontist to another, and he has mentioned the matter of a patient moving to another city temporarily or moving there permanently, and it would be a good idea if we could formulate some rules or suggestions to govern us in such cases. If there has not been any dispute between the patient and operator, it would be much easier to formulate rules that could be followed. When there has been a dispute between the patient and operator it is a much more delicate proposition to handle. I do not believe that any particular plan of action can govern all cases. Dr. Young may decide from his experience that the plan he suggested seems advisable. On the other hand, from the cases I have had in my practice I might think it would be best to adopt a different procedure.

I try to put myself in the patient's position as well as in the position of the orthodontist, keeping in mind the fact that the patient's interests are of paramount importance,



or of greater importance than those of the orthodontist. I cannot help but feel that if a patient has the suspicion that treatment is not progressing satisfactorily, he ought to have some chance of finding out whether or not he is justified.

If we should think it advisable to appoint a committee to attempt to formulate rules of procedure for these cases, it certainly would be helpful, and particularly if some of the older members would give their experience.

I have had patients come to me for consultation, and not knowing anything about them, I would start an examination before knowing there were any appliances in the mouth at all, and they would want to know if the treatment was satisfactory. It has happened in two of these cases that just by a glance at the mouth I was able to say with perfect honesty that I felt that the case was progressing satisfactorily. One mother said, "Is it possible to get the result this man is trying to get with that appliance?" I might have dismissed that case at the time and have said, "I will not consult with you about this unless the other orthodontist is present." If I had insisted upon a conference with him it might have created some friction, and it would have created an atmosphere of distrust between him and the patient. So I am inclined to decide things sometimes upon my own responsibility if I feel sure of the facts. Ethics is to my mind the application of the Golden Rule. I did not see any objection to my having seen this case and passing comment, so long as I was able with perfect honesty to commend, not to criticize the treatment. I told this mother that it was possible to get a satisfactory result with that appliance. "It is not an appliance I am using at the present time, but I have used it and have obtained satisfactory results with it. Your orthodontist is following a line of procedure that probably will be successful. I do not know who he is; I don't want to know who he is. There is nothing about the plan of treatment or appliance which would prevent obtaining a satisfactory result." That patient went away with her mind at ease. She would go on with treatment, so no friction developed. That is much better than to have raised any question. This is one phase of the subject. If you will put yourself in the patient's position and consider your child under treatment, you would feel there ought to be some provision for getting information to enable you to know whether or not the right thing is being done for the child. I am not saying that there can be a rule formulated for this, but I certainly think it ought to be considered.

The first patient that came to me from another orthodontist came with this story: The boy had been under treatment for a long time, and the patient felt that not only was the case not as good as when it was started but in a worse condition. The child had been subjected to continued and severe pain and discomfort, so that school work had to be given up; he could not sleep at night, and all that sort of thing, and the mother of this patient wanted an opinion as to whether the appliances could safely be removed or not. Final payment had been demanded, though she contended that the case not only was not finished, but was in a worse condition than when it was started, and she said it was an imposition to ask for a final payment on the case. In addition to that, the orthodontist had told the patient that she could not expect any assistance from any other orthodontists; they would not give any consideration to her case whatever as long as the appliances were on, and if the appliances were taken off the teeth would be loosened and permanently injured. She dared not take off the appliances, for she was afraid if they were taken off the patient would be injured.

I would be censured if I interfered with the case and gave advice regarding it, and so I told her, as Dr. Young has suggested, that I could not consider the case at all or give advice regarding it till she had the appliances removed. She said, "I will not go back to that man to have the appliances taken off. He has insulted me. He has refused to give me any satisfaction as to when the case is to be finished, and I know it is worse than when it was started." I said, "Maybe you can get the dentist who sent you to this orthodontist to remove the appliances." She went to him and he said to me, "I don't see why you should not take off the appliances." This patient contends that she is absolutely through with the other man; that she would not go back to him under any circumstances. He said, "If she is willing to put that in writing, you are perfectly justified to give such a patient advice."

Upon that basis I agreed to advise regarding removal of appliances, with the understanding that if further treatment was necessary, somebody else must do it. I would not be in a position to criticize this case.

I had the patient come in, and in looking the case over the mother asked what would happen if the appliances were removed. I learned the history of the case, and said that when the appliances are taken off during treatment the tendency is for the teeth to turn toward their old position. She said, "I would be delighted if they would do that." (Laughter.) Having told her that, she said, "I prefer to have the appliances taken off if you feel that there will be no injurious effect, that the teeth will not loosen and fall out?" I replied, "I think not, and I do not think there will be any injury to the teeth; yet nobody can say the teeth will certainly return to their old positions." I gave my advice upon the supposition that her representations were true, which is contrary to the contention of Dr. Young. I consider that there are circumstances which enable one to decide as to whether a patient or an operator is to blame. I take issue with Dr. Young in that respect, though I would not assume such responsibility unless I was absolutely certain beyond any doubt. I may be mistaken, but in any decision you make you have to assume some responsibility, and I am willing to take that responsibility after I have made a decision.

Now, I removed the appliances for that patient. In the first place, I took impressions of the case with the appliances on, so that it would show the condition before any interference with it. I took that for the purpose of protection, for all parties, not knowing definitely the merits of the controversy. It would protect either party who was in the right. It would record the actual condition, and I would not have to report my opinion of the case. I figured that I would avoid controversy with the other man; I felt it was the fair thing to do.

Shortly after that the other orthodontist heard that this patient had consulted me. He said he would like to show me the original models, which he did. These were what I had been wanting to see. I could not see why he did this because the original models showed that the mother of the patient was absolutely right beyond any controversy. There was a beautiful arrangement of the molar and bicuspid teeth on both sides. The upper arch was narrow enough to crowd one of the cuspids labially; the lower incisors were misplaced, but there was no extreme malocclusion. There was a serviceable arrangement of these teeth and, as a result of the treatment, that was all broken up, and possibly permanent injury done. I felt that if for any reason whatever such a condition had developed in my practice, even where there were circumstances over which I had no control, I would feel like doing my best to correct it and if unable to do so, to make some financial adjustment with the patient just in a spirit of fair play, rather than insist upon the last penny of the contract. That man was simply taking advantage of a supposed adherence to the code of ethics for mutual protection. I did not propose to be a party to it. If I am wrong, I will accept the censure. However, I feel I was right.

Are we going to condone such actions as that by making no protest? I cannot feel that it is right. I believe it is a reflection upon orthodontia to let such things as that go on unnoticed.

As Dr. Hume has pointed out, there is no provision in our Constitution for taking notice of things of that sort, but I believe there should be. We have this one rule he has mentioned (regarding commissions), and I think you will all agree with me that it has been a very good rule, and it has been effective in deterring men from doing that very thing. If there are other things that can be put in a code of rules in the same way, I think they will do just as much good. There are lots of things happening, I know from personal observation, that are to the discredit of our specialty, simply because the operators do not have the proper sense of their responsibility to patients. They seem to have the idea that here is a profession that is going to enable them to make money easily, and that is the main consideration. Very little attention is given to the responsibility toward the patient. We hear men bragging about the big fees they get, and not of the fine results obtained for their patients.

There is another thing which bears upon the responsibility of the orthodontist to the patient. Dr. Young has mentioned a patient going to another city either temporarily or permanently, but what is to be the arrangement when the orthodontist goes to another city? What will be considered a fair settlement with the patients that are under treatment? Dr. Hawley has made a statement which bears on that somewhat, and I think his suggestion is a good one, that divided responsibility for the work or financial obligation is a bad thing, and that if a definite settlement can be made, it is much better.

I think there might be arranged a set of suggestions, if not rules, covering that point. It is going to come up from time to time when orthodontists move from one place to another, and it is a much more serious thing when the orthodontist moves, for many patients are left with incomplete treatment. The orthodontist had a grasp of the whole situation of each case from the start, and (ability being equal) nobody else can take that case up as satisfactorily and complete it as the one who started it could have completed it. Is there any adjustment due the patient? It is possible that the man taking over a practice is as competent as the man who had the practice, and the patient might be willing to continue with the same financial arrangement. On the other hand, a patient might feel that the first man was selected for some special reason, because he possessed great skill or had a very fine reputation. Has that man a right to turn these patients over to the man whom he selects to take care of his practice without asking these patients if it is satisfactory to them? Has he a property right in these patients that he can tell them to go to somebody else without regard to their interests? If I should move to San Francisco, to Boston, or to New Orleans, would it be ethical for me, would it be considered fair to the patient, for me to simply send my patients a notice that I was going to leave the city, and I had arranged with somebody else to take care of my practice, and that the financial arrangement would go on the same as it had been, and then leave within a few days before the patients had a chance to come in and adjust this matter with me? Would that meet with your sense of fair play? Now, what arrangements should be made if a man has decided to move from one city to another? Has he a right to turn these patients over to another and expect compensation from the man he turns them over to? Would it not be fair for him to pay the man who takes over his practice? We all have a number of patients whose treatments are not going as we expected them to go, and we should be willing to pay somebody else for finishing them.

There is a considerable responsibility in finishing cases. Patients come to me from here and there and say "Dr. So and So corrected this case and it needs a little attention to finish it." He has collected perhaps a big fee and has practically finished the case according to the patient's view, but I think some of you realize how unfinished some of these cases are when they come to you in that manner. It is unfair to the patient and unfair to the second orthodontist to let a patient go away with that understanding.

I have probably said enough to emphasize the point that there are situations which cannot be settled entirely on the lines Dr. Young has pointed out. Nevertheless we ought to do something about it. There ought to be a committee appointed to see what can be done to formulate rules of ethics for the Society governing such cases.

*Dr. J. Lowe Young.*—In closing I wish to express my appreciation of the free discussion given the subject brought before you today. We are discussing a rather delicate matter and I should like to ask Dr. Lischer if he had written the man to whom he referred the case of which he spoke.

*Dr. Lischer.*—Yes.

*Dr. Young.*—Then the man to whom you referred this patient was entirely in the wrong. You did what I should say is the correct thing in referring the case. The young man referred to by Dr. Lourie was placed in a very delicate position but if he had followed the course advised by Dr. Lourie, which I most heartily recommend, and taken a set of impressions showing the conditions of the teeth with the appliances in place and then found, when he consulted the orthodontist who had been treating the case, that the statements made by the parents were correct, then I think he had a perfect right to state wherein he considered the treatment was wrong even though it made bad professional feeling.

Probably I would not have had the same views when I began the practice of orthodontia as I do at the present time, but I feel that the duty of the orthodontist toward the welfare of the patient is so paramount that the truth should be told regardless of who suffers.



## SOME THINGS A DENTAL PRACTITIONER SHOULD KNOW ABOUT ORTHODONTIA TO BEST SERVE HIS PATIENTS\*

BY C. ANGUS KENNEDY, TORONTO, CANADA

AS THE heading of this paper signifies, this will be a talk with the general practitioner who lives in a city where he has the opportunity of conversing and consulting with an orthodontist.

There have been so few chances for him to receive any instruction in this subject, on account of so few essays appearing in our magazines, or such topics being so seldom on the programme of any of our dental society conventions.

The first step in this line would be to take care of the health of the patient and see that his nervous system would be able to stand the duration of treatment. As some cases are long, the history of health should be thorough, and, where necessary, advice given to the patient and parent.

The practitioner should have a knowledge of the development and growth of the tooth, the alveolar process, and pericemental membrane, the characteristics and functions of the bone cells in tearing down and rebuilding of bone and tissue, the development and normal use of the muscles of the face and jaws, the disuse and abuse of these same muscles and the resulting malocclusion. These results are often the cause of the growth of adenoids and nasal obstructions, which in turn cause mouth-breathing. Through lack of proper instructions, the child is allowed to continue in this practice, producing a great malocclusion, facial deformity, and pathologic conditions of the respiratory tract.

We see these patients from afar,—thin, sallow cheeks, undeveloped upper lip, protruding upper anterior teeth, narrow-chested, and a general appearance of being poorly nourished. These symptoms belong to the mouth-breathing habit, and are started by the patient not being able to breathe through the nose on account of adenoids or nasal obstructions.

The respiratory tract should be examined and treated by a rhinologist to clear the passages. After this has been accomplished, the lips should be held together at night by adhesive tape, or some such appliance, until the habit is broken and the patient is breathing in a normal manner.

Another habit is that of tongue biting or finger sucking, which is very hard to overcome, and which produces an infraocclusion, the patient being unable to bite anything with the anterior teeth.

By studying the eruptive period of the temporary and permanent teeth, the general practitioner should know when to extract and when not to extract. In deciding this point he should be sure of his diagnosis and also be able to give a good prognosis of the case. The extraction of temporary teeth

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too early will allow the remaining teeth to drift, closing the space for the permanent teeth following. Also, the extraction of the first permanent molar is a dangerous operation, as it allows the second molar to tilt forward, causing the inclined planes to occlude in a mesial position, and forcing the opposing jaw into malocclusion. In fact, the extraction of teeth for the correction of malocclusion should be studied very carefully, as a couple of years afterwards a much greater deformity may take place as a result of the extraction.

A thorough knowledge of the causes of the promotion and delaying of eruption of the teeth, such as syphilis, rachitis, tuberculosis, is also very necessary.

In speaking on this subject it should be impressed upon all practitioners that we should have a good idea of what correct occlusion is, and what it stands for, as malocclusion is only recognizable as being away from normal occlusion. This is one of the first requisites for giving a good diagnosis, and we cannot give proper treatment without the knowledge of the fundamental principles. It is absolutely imperative that we be able to correctly diagnose malocclusion before we can hope to successfully treat it. It is necessary to know the relationship of every tooth, cusp, and inclined plane of the teeth of the mandible to the teeth of the maxillæ.

Malocclusion of the teeth is not inherited. The child inherits characteristics from the parent, but the influence on malocclusion is limited to the environment of the child, whether it be in its embryonic state or after birth.

Under modern methods of living, a very large percentage of babies are bottle-fed. Aside entirely from the vital necessity for the baby's food being so prepared as to contain a "balanced diet" during this important period, it is essential that the child find it necessary to thoroughly exercise the jaws at the time of feeding.

The baby should be held in the arms in the posture as for breast-feeding and the bottle so held that the child is compelled to work for the food. A most pernicious habit is that followed in many cases where the bottle is propped up and a nipple used permitting such free flow of food that practically no effort is required on the part of the child to obtain the food.

Food and exercise are the most important elements in the proper development of the dental arches, and my plea is that the advantages of thorough mastication be not overlooked, even in the case of the very youngest child.

One should have a good working knowledge of the above events in the life of a child, to be able to give a good diagnosis and information to the parents. A physician, in being called to the bedside, gives a thorough examination and diagnosis of the symptoms as he sees them, and gives his patient the result of his deliberations. This advice might be for consultation with a surgeon or specialist, or for an operation. The result is that the patient is receiving the best advice and services which are possible. Our consultations should take place early in the life of the child, so that the orthodontist would not have to wait until the permanent teeth are all in position before starting a difficult case. The orthodontist needs the hearty cooperation of the practitioner all the time, and if we could work in closer touch and together,

the patients would all be benefited. An example of this was brought to my attention a few weeks ago, when one of our best practitioners had inserted an inlay in a premolar for a patient who was also under the care of an orthodontist. He thought he had a very good result in the inlay. The grooves and marginal ridges were in good condition, and he had splendid occlusion. The orthodontist said that the mesio-distal diameter of the reconstructed tooth was not wide enough, and that the inlay should be  $3/100$  of an inch longer, so as to keep the correct occlusal line.

The consultation which afterwards took place between the practitioner and the specialist was very beneficial to both, as each saw the oral cavity from the viewpoint of the other, and the result has been an education and a great help to both,—the specialist pointing out the phases where his difficult work can be assisted by the practitioner, especially in the case of extractions, carving cusps for fillings and inlays, and permanent restorations for retaining appliances, and the practitioner explaining his features of the case.

If we, as a profession, are going to render the greatest possible service to the public, there must be closer cooperation between the dentist and the orthodontist. There are many difficulties which we have to overcome, and by working together the patient is bound to benefit, and the oral cavity of the child will be set in a healthy and normal condition. Often, we who are spending all our time in trying to get efficient results have some hard problems to solve, when a consultation would help materially.

There has been a tendency in the past for the two branches of dentistry to drift apart, instead of combining their efforts.

There is a great field for the general practitioner in the new department of preventive orthodontia. He comes in contact with the child before the orthodontist, and could prevent numerous cases from developing into severe cases of malocclusion.

He should know occlusion and be able to recognize irregularities in a developing mouth; also, that the time to correct any malocclusion is as soon as the tendency manifests itself, not waiting until the patient is older, or until all the permanent teeth are in position. The case should be completed by that time, instead of just beginning.

When a young patient is found to be a mouth-breather, he should look for the cause along the respiratory tract; or when a temporary tooth is remaining in position too long, and thereby causing the permanent teeth to erupt in a malposed position; or when a child is not developing the normal spaces between the anterior teeth, showing that the jaw is not expanding and nature is making no preparation for the reception of the larger permanent teeth; if he would send the patient for a consultation with an orthodontist, their combined judgment would result in better service to the patient.

It takes a long time and special study to properly diagnose and pass judgment on the treatment of malocclusion and the dentist often overlooks conditions today that tomorrow may prove to be most serious deformities.

Dr. F. B. Noyes says: "It should be the dentist who would send patients to seek the services of the orthodontist, and if the dentists were alive to



their responsibility, and were sufficiently informed to recognize the existence of malocclusion before it developed into deformity, it would be better for all concerned."

In conclusion I would say that the closer the relation concerning consultation between the dentist and the orthodontist, the better it will be for the dental profession and the general public.

#### DISCUSSION

*Dr. H. B. Hamilton, Ithaca, N. Y.*—I do not know that I can add anything of particular interest to this excellent paper, because I agree heartily with most of the things the author has said. There is one thing, however, I might lay a little stress upon, and that is that the average dentist does not seem to appreciate normal occlusion or normal tooth forms. One of the most common troubles we have to contend with is the poorly shaped occlusal restorations. The average occlusal filling or inlay is flat and destitute of fissures and grooves, and this type of work seems to be more or less general, judging from what I see in the mouths from many parts of the country. It is my practice to reshape these restorations with a bur to some semblance of normal form.

It seems to me that if the general practitioner gives any attention whatever to orthodontia, he will very soon appreciate the necessity of normal tooth form and his restorations will improve wonderfully, both to his own and his patients' advantage.

*Dr. Joseph D. Eby, New York City.*—I have enjoyed the Doctor's paper very much and am glad that our Committee had the foresight to incorporate this subject into our program for several reasons:

This is always a timely subject, for it is impossible for specialists to regard too keenly, or have their attention called too frequently to the great obligations they are under to general practitioners and specialists in other services.

It is my opinion that alas too few of us have meditated over this subject and given it the study which it merits and accordingly adopt a definite policy toward fellow-men in order to overcome our various short-comings in traits of character and temperament as we should in relation to this topic.

The relation between the specialist in a given field and the general practitioner is one which must be handled in a very careful and tactful manner and which, if analyzed, becomes a recognition of mutual intelligence, wherein the minds must be brought together from divergent thoughts, which time under different duties naturally effects, to an equal basis or common meeting ground, in order to best serve their patients.

As soon as one man assumes the attitude that he knows so much more than the other fellow, that moment he begins to show his own self-centered disregard and begins to develop self-destructive conditions which, upon becoming his repute, are dearly paid for, as the self-placed halo over the high brow eventually becoming a millstone around the neck.

There is also the opposite extreme to this attitude which reflects self-centeredness and becomes so objectionable to some men that their attention is only fretted instead of attracted, that is, the attitude of such simple simplicity, such as would better suit a layman in discourse on the subject.

I do not think that any of us like to be led to feel that we are or should be freshmen students again; it is very easy to broach the practitioner's feelings in this way, thereby exchanging difficulties for the purposes sought.

There is no law which defines orthodontists; legally we are dentists and our relations with practitioners should be from the viewpoint of dentists, not separated by some mystic portal beyond which orthodontists thrive in another atmosphere.

The thought which I am endeavoring to express may be perhaps better illustrated by describing a happening which came under my observation and being partially instrumental was much to my embarrassment.

Once an orthodontist of great reputation travelled a long distance to take some thoughts

on orthodontia to a meeting of a large body of general practitioners who had gathered from several states to hear him.

His interpretation of that situation was to expound the highest theories and most tedious technic which are the very reasons why orthodontia is a specialty and is prohibitive in that sense in general practice.

His mission was lost with the wonderful opportunity he had to do great good, because of his failure to realize that those dentists were hungry for more of the fundamentals with which they could serve humanity better by knowing how and when to cooperate with orthodontists or in the treatment of some simple conditions, and he left them worse confused than when he met them, with a bad attitude established toward himself and discouragement toward orthodontia, when as a matter of fact their work is more important to us than our work is to them.

If orthodontists will meet their fellow professional brethren as equally highly trained technicians in other practice, carry the proper message to them, and deal with them in the plain matters of fact, compatible with a generous mixture of the Golden Rule, then and then only will the flavor be pleasant and become the asset of each individual's usefulness and a credit to the cause to which each one devotes his life's work.

I trust that what I have said is entirely consistent with Dr. Kennedy's thoughts as I would hate to be guilty of departing from the essence of this too important phase of our work which makes and breaks so many men.

I wish to thank friend Kennedy for bringing the thoughts in this able essay to us and also trust that copies of it may fall into our hands during the quiet hours, when after reading it again, we may inventory ourselves to the fullest extent of our personal needs along these lines.

*Dr. Frank A. Delabarre, Boston, Mass.*—I would like to speak on this topic in particular because I was a general practitioner before I took up the specialty of orthodontia, so I feel peculiarly kindly towards both classes of men, knowing intimately the problems that confront them.

There is one point I would in particular emphasize as being the one way in which the general practitioner of dentistry can help the orthodontist most. That one way is through an adequate appreciation of the fact that it is absolutely essential to preserve the temporary teeth in health throughout their intended life. And why? For the most obvious reason that in all cases of malocclusion that we come across neglect of the temporary teeth seems frequent and most severe, complicating the things with which we have to deal. If we could have our cases of malocclusion come to us without the complications that creep in through neglect of the temporary teeth, through their decay, through their being abscessed, and to early loss, our cases of malocclusion would be much simpler to handle. In that way alone the dental practitioner could help us to the greatest extent.

*Dr. C. R. Baker, Evanston, Illinois.*—I agree thoroughly with all that was expressed in the paper and also in the discussion. There is one idea that I might add and that is, when deciduous teeth are lost prematurely, the general practitioner should see that the normal space is maintained in the arches. An efficient appliance should be placed by the dentist or by an orthodontist. In case a deciduous molar is lost prematurely, the space maintained should be the mesio-distal width of the deciduous molar rather than the mesio-distal width of the corresponding premolar.

*Dr. John A. McPhail, Cincinnati, Ohio.*—I think we have made a mistake because we have our cabinets filled with malocclusions. I believe the average general practitioner does not understand normal occlusion and the care of the deciduous teeth.

In attending any dental meeting you hear a great deal about the occlusion of teeth, and it seems peculiar to me that a man who can get the teeth in normal occlusion cannot recognize a malocclusion in a deciduous set of teeth. That is one place where we make a mistake. Everything is malocclusion with us. I have a boy of 6, and I am unfortunate in having another child who has only normal occlusion on one side. He has a perfect set of teeth on one side with normal occlusion. I have taken impressions of their teeth and have been making models, and when a case comes in I get out these cases of normal occlusion. In

my boy the occlusion is not quite normal. He is one of those borderline cases. I show the little patients what a normal occlusion is, what a normal arch is, as I can understand it. It seems to me, it ought to be embarrassing to a general practitioner to have a mother or one of the parents call attention to a malocclusion when he has been working for the child for years. It would be embarrassing to me I am sure. Those who are engaged in general practice must have a great many cases of malocclusion in their practice. There is a tendency for all of us to see in the mouth the things for which we are looking. If you are a pyorrhea specialist, and a patient comes to you, you will see pyorrhea. You may want the teeth that are involved taken out. On the other hand, the bridge man wants to put in a bridge. I think all the average orthodontist can see is malocclusion. It seems to me, we should view the mouth as a whole. It would be a good thing for us to see the mouth outside of malocclusions once in a while and to remember that there are other things in the mouth besides deformities. We can be of great help to the general practitioner in this way as well as be of profit to ourselves.

I have tried to cooperate with men who send me cases. I like to send back a patient to a dentist who referred the case to me after the appliances are on to see whether he agrees with me as to how the bands ought to be put on, and later I send the patient back to him to see whether I am keeping the teeth in proper shape and in regard to the general condition of the mouth. It is up to us, I think to cooperate with the general practitioner rather than set ourselves apart as somebody who is wiser than the rest, because the chances are we are not very much different.

Another thing: Dr. Dewey had an editorial some time ago about extracting teeth. I had a little patient come to me recently who was sent to have some teeth extracted in order to make room for the laterals; with the instruction that if we took out the temporary cuspids it would make room for the laterals. We all know that it would, but how much trouble we would get in later on. An exodontist said that was not the right thing to do, but if the general practitioner wants to have it done, I will do it. It is unfortunate that our consciences can be made so blunt that we are influenced to do these things even though we know they are wrong. I believe when an exodontist will extract the teeth of a patient when it is not indicated, we have a right to censure him and tell the patient he was wrong. I do not think we need to use any diplomacy about that, because the patient ought to know. If the exodontist extracted the teeth through ignorance, it is a different proposition.

*Dr. C. A. Kennedy, Toronto, Canada* (closing).—I want to thank the members for their liberal and free discussion. If we could take a referred patient to the practitioner and explain what we purpose doing and show him some of our difficulties, we would gain his cooperation much more sympathetically. Our specialty needs this, and we should strive at all times to gain it.



## TREATMENT OF A CASE OF COMPLEX NEUTROCLUSION NECESSITATING EXTRACTION OF TWO MAXILLARY AND TWO MANDIBULAR FIRST PREMOLARS IN ORDER TO PRESERVE THE FACIAL OUTLINES

BY A. C. ROHDE, B.S., D.D.S.,

*From the Department of Orthodontia, Federspiel's Dental Polyclinic, Milwaukee, Wis.*

**D**URING the last two decades it has been the universal practice by orthodontists to treat all cases of malocclusion by establishing a normal relation of the inclined planes of the cusps of the teeth, in order to produce the proper function of the dental arches.

For many years, as an associate of Doctor M. N. Federspiel, we have, to a great degree, followed this method of practice. However, during the last years, we have come to the realization, from our knowledge of experience in

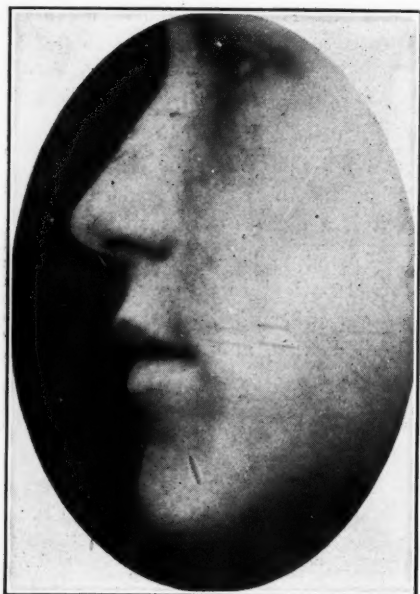


Fig. 1.

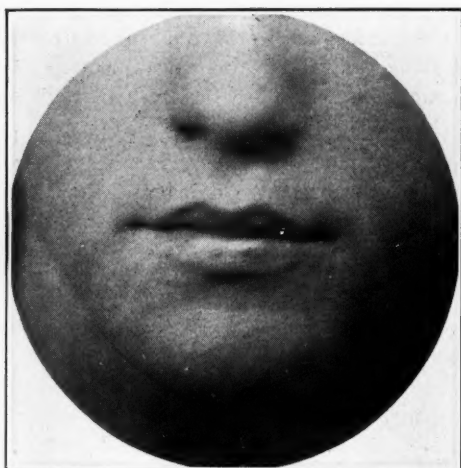


Fig. 2.

the treatment of orthodontic cases, that, in order to obtain a favorable prognosis, it was necessary to depart from the trammels of custom and the difficulty of overcoming the dead weight of authority of certain rules that had been established.

In our experiences, we have observed that in some cases where we obtained a normal relation of the inclined planes, we had disturbed the harmonious relation of the facial contour. Furthermore, in some of these cases of complex neutroclusion, the molars and premolars had shifted forward on

account of the early loss of the deciduous canines, causing the canines to erupt outside or inside line of the arch, while the incisors were in normal relation and giving proper balance to the facial contour.

In the following case, which I herewith report, is a striking example of such a condition:

Miss K., a young high school girl, fourteen years of age, weight 125 pounds, came to our clinic for orthodontic care. Her general health was good, breathing normal, and no enlarged tonsils or adenoids. Her jaws were fully developed, all permanent teeth, with the exception of the third molars, erupted. Her facial outlines we considered normal. The maxillary canines were in infra-

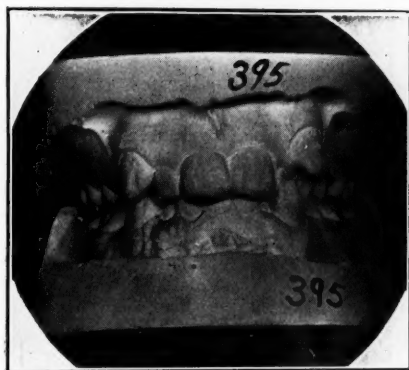


Fig. 3.

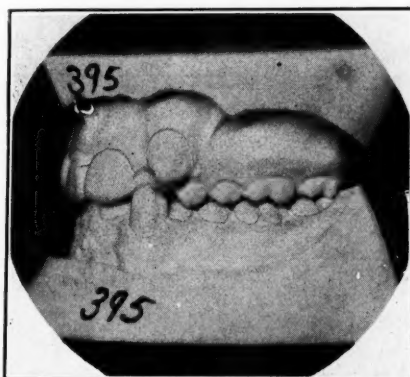


Fig. 4.

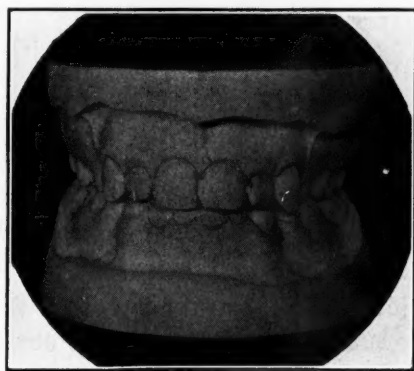


Fig. 5.

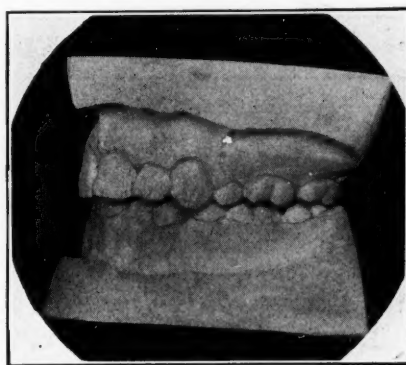


Fig. 6.

labioversion, the mandibular left canine in labioversion, the right mandibular canine in linguoversion, and the anterior incisors crowded, the premolar and molars having shifted mesially.

**Diagnosis.**—Complex neutroclusion. According to past teaching and the stand so many orthodontists take but not always practice in regard to extracting the premolars made us make an exceptionally close examination in this case to bear out our contention. We could not bring ourselves to believe that, if we enlarged both arches to make room for the canines, we could, in all justice to the patient, preserve her individual normal.

The treatment consisted in extracting both maxillary and mandibular first premolars. Anchor bands were then fitted on the first molars with spurs

soldered to the buccal surface, and the soldered lingual arch resting against the lingual surfaces of the anterior teeth served as secondary anchorage. Bands with a labial spur were fitted to the canines to which rubber elastics were applied and snapped to the spurs on the molar anchor bands. In this way the canines were gradually brought into place.

After this had been accomplished, the appliance was removed and reconstructed with power tubes and labial arch, and the rest of the teeth brought into alignment. No retainers were worn, the teeth retaining themselves.

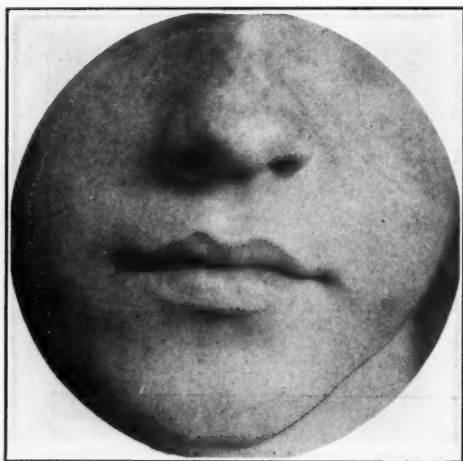


Fig. 7.



Fig. 8.

Figs. 1 and 2 show the profile and front view before treatment. Notice the facial lines are not distorted. Figs. 3 and 4 show the side and front view of casts of teeth before treatment. Note malposition of teeth. Figs. 5 and 6 show the case one year after orthodontic care. Figs. 7 and 8 show front and profile of patient 1 year after orthodontic care. Had we expanded and enlarged the arches without extracting the first premolar teeth, this condition would then have distorted the facial lines, because the enlarged arches would be out of harmony with the contour of her face.



## PRACTICAL APPLICATION OF BIOLOGIC LAWS\*

BY CALVIN S. CASE, M.D., D.D.S., CHICAGO, ILL.

WHAT interests us most as orthodontists, especially as we essay the correction or improvement of facial beauty that is marred or deformed by malpositions and malrelations of the teeth and jaws, is the fact that in our country, the United States above all other countries, the union of dissimilar types occurs most frequently. The laws of heredity do not necessarily produce in the offspring a blended composite type. In fact, such an occurrence from parents of dissimilar types of both plants and animals often exhibits an association of separate distinct physical characters that have come from both parents or their progenitors. A slight observation of family physiognomies must fully demonstrate the inheritance of distinct features of both parents, and when this occurs in the associated parts of a physiognomy, it may result in the most decided disharmony of the features. "For Nature knows no laws of esthetics, as beautiful and harmonious as her products are."

Under the forces of atavistic heredity, also, there have frequently arisen peculiar and inharmonious characteristics which could not be remembered as having previous existence in immediate forebears, but which have been definitely traced through records of history to some very distant progenitor.

These laws were fully recognized by both Darwin and Wallace in the earlier researches of evolution. Huxley, more than forty years ago, in writing upon the laws of heredity and variation, said: "It is a matter of perfectly common experience that the tendency on the part of the offspring always is to reproduce the form of the parents; that is a matter of ordinary and familiar observation. In all cases of propagation and perpetuation, there seems to be a tendency in the offspring to take the characters of the parental organisms. You do not find that the male follows the precise type of the male parent, nor does the female always inherit the precise characteristics of the mother—there is always a proportion of the female characters in the male offspring, and of the male characters in the female offspring. There are all sorts of intermixtures and intermediate conditions between the two of dissimilar types, when complexion, beauty, or fifty other different peculiarities belonging to either side of the house are reproduced in other members of the same family. You will also see a child in a family who is not like either its father or mother; but some old person who knew its grandparents, or it may be an uncle, or perhaps a more distant relative, will see a great similarity between the child and one of these."

The disharmonies in esthetic facial outlines which are caused from malposed

\*This article is revised from the fifth of five chapters of Part II entitled "Etiology of Malocclusion" in the forthcoming revision of "Dental Orthopedia" by Dr. Calvin S. Case. The first chapter entitled "Etiologic Principles of Malocclusion with Reference to Treatment" was published in the September, 1920 number of Dental Items of Interest. The second, third, and fourth chapters entitled: Etiologic Influences of Deciduous and Erupting Permanent Teeth with Principles of Treatment; Laws of Biology regarded as Etiologic Factors in Malocclusion; Heredity and Variation Ethnologically Considered, were respectively published in the March, April, and June issues of this Journal.

teeth are quite as diversified as disharmonies in size, form, and relation of the features of different physiognomies compared to the symmetrical. How often do we see some one feature of a face too large or too small for the rest of the features of which it forms a part, and this is true in varying degrees of every feature and organ of the human body as compared to that which may be considered as the truly normal or symmetrically formed type.

The surface-contour, form, size, and varying positions of the features which compose the human physiognomy are largely dependent upon the osseous framework, which in turn is, normally, either an inherent type or the union in the offspring of types which vary from harmony to the distinctively disharmonious. In all conditions of health and normality, these same influences and laws of development constitute the causes which govern and determine the relative sizes and forms of every organ and natural contour. From these sources have mainly arisen all the distinctively different types of races.

In America, where the union of disharmonious types has had full sway, we find a great variety of disharmonies in the physical forms of its inhabitants. On the other hand, among people such as the Japanese and the Chinese, whose native countries are not so extensively encroached upon with the intermingling of foreign types, individual disharmonies and variations from the racial type are comparatively uncommon. And while their characteristic type, from our viewpoint, may be far from that which we recognize as the highest physical development in beauty and perfection of form, it nevertheless is that which has normally arisen under the influence of heredity, natural selection, and environment, and consequently *to them it is a normal type*.

One of the characteristic dento-facial types that is common with a Japanese physiognomy is a depression or unesthetic retrusion along the upper part of the upper lip, and at the base of the rarely prominent nose. This depression heightens the usual pronounced malar prominences and shortens the somewhat thin upper lip in its relation to the incisal ends of the teeth—the lip itself approaching a prehensile inclination of 45 degrees. In a number of cases which the author has examined, the disto-mesial relations of the buccal teeth were normal in occlusion, while the labial teeth, particularly the incisors, were more labially inclined than we would consider esthetically normal. The cutting edges, especially of the upper incisors, were more or less protruding, which seemed to be due to a retrusion of the apical zone, or that which we would denominate from an esthetic standpoint, a repression of the normal development of the middle features of the physiognomy. If this condition, which is a normal Japanese type, occurred with an Anglo-Saxon, *as it occasionally does*, it would be diagnosed as *decidedly abnormal*, notwithstanding the perfect occlusion of the buccal teeth. And in all probability, if not an inherited type, it would be caused by some abnormal condition of the maxillary sinuses, and result in a lack of development of the intermaxillary processes, and would demand a bodily protrusive movement of the apical zone of the incisors, and a retrusive movement of the incisal zone to correct the facial outlines. See Type C, Division 2, Class II.

Much could be written and quoted along this line, but space will not permit. With a moderate understanding of the ethnologic principles of biologic develop-

ment, it will be seen that all forms of animal life about us are the offspring of progenitors whose physical and mental characteristics they repeat to a very large extent, either by direct inheritance with the blending of types, or with the association of the distinct characters of one or both parents, or through atavism from more distant progenitors, etc.

The immediate association in the physiognomies of individuals of distinct characteristics of the different racial types from which they sprung, through some form of heredity in which Mendel's law may have played a part, is one of the most important ethnologic considerations. In connection with these sources of reproduction, one should not forget that the law of natural variation is always and everywhere in action through the metabolic activities of the germ cells, with the same transmissible properties as those of long lines of heredity.

#### PRINCIPLES OF HEREDITY IN RELATION TO TREATMENT

The following phase of this subject pertains to that which we find exemplified everywhere about us. First, to the relationship as regards size, form, and relative position of the mandibular and maxillary bones proper, to the rest of the bones which form the framework of physiognomies; second, to the relations of the dental and alveolar arches to the mandibles and maxillæ—both with a view of comparing the disharmonies we commonly find, to that harmony of dento-facial relation which accords with our present standard of perfection and beauty.

It will be seen that the types of people present the most marked differences in the form and size of the bones which constitute the framework of human bodies. Thus we have tall and short men, either of whom may possess strong heavily built bones or slender delicate ones. Nor does esthetic harmony or the typically anatomical prevail, except rarely. Moreover, it is common to find disharmonies in the sizes and relations of bones which are closely associated, as the bones of the face, and which can frequently be traced to direct inheritance, or the admixture through some channel of heredity of disharmonious types.

In this investigation, which anyone with an observing mind may pursue, there will be found to exist every possible variation between the so-called "freaks" and those of Apollo-like harmony and perfection. We find noses of every possible shape in relation to harmony with the features upon which they are placed, and jaws prognathous and retruded in relation to the rest of the features. This must be equally true of the sizes of teeth whose width measurements have been erroneously employed to determine the sizes of the newly regulated dental arches. If the sizes of dental arches are made in exact mathematical proportion to the width of the upper central incisors, will not these arches be found at times too large or too small for facial harmony, and to an extent that is noticeably deforming? We frequently find the sizes of the front teeth quite out of proportion with the features. Moreover, the circumference measurements of the right and left centrals and other teeth are rarely exactly the same, and commonly vary in their circumferences under normal conditions,  $1/64$  to  $1/32$  of an inch, and at times even more.

Many of the facial disharmonies pertain to the dental and maxillary frame-



work, and characterize the physiognomies as plain, homely, or deformed, according to the character and amount of the protrusion or retrusion over the dento-facial and mandibular area.

In many protrusions, both unimaxillary and bimaxillary, the entire bodies of the maxillary bones are protruded in their dento-facial relations, and this is easily determined by the prominence of the chin and the prominence at the base of the nose and along the upper portion of the upper lip. In many of these cases the teeth are in perfect harmony of size and position with the protruded jaws—in arch width, alignment, and inclination—and yet distinctly out of balance with the esthetic relations of the rest of the features. In bimaxillary malpositions the dentures are often found in typical occlusion in the white as well as in colored races, because both dentures are equally protruded. Again, in a large proportion of protrusions, the protrusion pertains mostly or wholly to the dental and alveolar arches alone. As an illustration of this, see the beginning of Dr. Cryer's case (Chapter X) and the physiognomies of bimaxillary protrusions illustrated in this work. Moreover, in nearly all typical protrusions of the

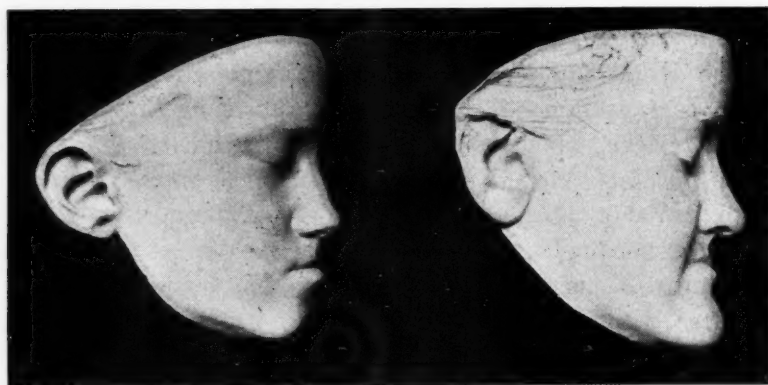


Fig. 1.

dentures not due to local causes, the teeth are crowded closely together, showing that the buccal teeth partake of the protruded malposition quite as much as the labial teeth.

Attention is called also to the variety of antero-posterior malpositions of the lower denture in relation to the mandible. Fig. 1 is made from the facial casts of two cases before treatment. The mandible of the one on the right, judging from the facial outlines, is seen to be decidedly prognathous, but from the relative position of the lower lip, the lower denture must be in about normal dento-facial relations. With the case on the left, judging from the relative positions of the chin, the lower lip and labio-mental curve, these conditions are reversed, that is: the mandible is in esthetic dento-facial relations, but with the lower denture protruded.

These two cases, like many others which could be pointed out, illustrate the decided dissimilarity in types which may arise *with the same character of occlusion of the dentures*. These belong in Class III in which the upper denture is more or less retruded, and with the lower denture closing far in front of a normal occlusion with the upper denture. Illustrations of this kind, moreover,

definitely show that through that most prolific form of heredity—i. e., the sexual union of dissimilar characters—even entire upper or lower dentures take decidedly different positions at times in relation to the bones in which they grow.

*Thus many of the most pronounced, as well as minor malocclusions, having every possible malrelation of the teeth, jaws, and facial outlines, have arisen through one of the many avenues of heredity.* The proof of this statement is so plainly shown on every hand, and, moreover, it accords so thoroughly with the laws of biology in both flora and fauna, that the fantastic claims that "all malocclusions arise from local causes," and "God does not make such mistakes in forming the human anatomies," etc., must be regarded as crass ignorance of the well established principles of heredity.

This brings us to a point which should be emphasized, because it pertains to the question of early correction, and particularly to the teaching of shifting the deciduous buccal teeth and recently erupted first molars to normal, in all cases of disto-mesial malocclusion, even though the buccal cusps are in full malinterdigitation.

It should be understood that the author is heartily in accord with this movement for young patients, where it is distinctly seen to be demanded. The cases that demand it are: First, those which arise from local causes and which otherwise would have been in normal relations; and second, from whatever cause, if one denture or the other is retruded in its dento-facial relations, and the other is not so protruded but that the slight distal movement that is necessary for its correction can be safely and advisedly performed.

If it is other than this, as it is quite liable to be, where the lower denture is destined to be normal, or not protruded, and the opposing denture, through heredity, is destined to be decidedly protruded, the operator can rest assured that the shifting of the first molars to a normal occlusion, *at whatever age, will ultimately result in a bimaxillary protrusion*, permanently marring the beauty of the face. Nor can one be sure what the adult conditions are destined to be at this very early age, when the bones are just beginning to take on the inherent stamp of their progenitors.

In the hundreds of cases which have come under the author's observation during the ages of childhood and youth, there is no room to spare in the jaws back of the deciduous molars, except at the time preparatory to the eruption of the first permanent molars, and finally the second, and then the third molars; the latter being often obliged to occupy quite as crowded positions in protruding cases as are seen when teeth are not protruded. In other words, in all cases of typical protrusion in the white race due to heredity, the natural position of the back teeth in relation to the tuberosities and rami allows no more than a very moderate distal movement without encroaching upon space demanded for the succeeding molars, a demand which Nature will at one time or another insist upon, or else make trouble.

Therefore, in all marked inherent protrusions of the upper, for example, if the first molars are extensively moved distally for the purpose of placing them in a normal occlusion in early childhood or later, one may count quite surely upon ultimate disappointment of intention. If the teeth do not go back to their former

inherited malinterdigitation, as they are quite liable to do through the eruptive forces of the second or third molars, a bimaxillary protrusion, which is quite as bad, will be stamped upon the features through life.

In the discussion of a paper read before a prominent society upon the advantages of radiograms in orthodontia, a prominent teacher in a dental college—who evidently had caught the “bone growing” fever—criticised Dr. Cryer’s warning in regard to the excessive distal movement of molars, and he did this upon the bare evidence of a single case that he illustrated with the lantern, showing a third molar which evidently had been impacted by a distal artificial movement of a second molar, and which had finally erupted to normal position. This speaker expressed in unmistakable terms his belief that the crowding of the teeth and the artificially applied forces will stimulate an interstitial extra growth and elongation of the jaw-bone itself, and thus carry all the denture forward and give plenty of room for the third molars. This is abundantly proved to be untrue by the many instances of crowded dentures that are protruded in relation to the jaws in which they are placed.

If Nature possessed this power in the individual to cause the jaws and associate bones to grow to meet the requirements of room and facial harmony, or if it were possible for us to stimulate Nature to an extra interstitial growth, there would be far more harmonious relations between the sizes of dentures and jaws than are seen to exist. We would not so frequently see retruded chins in connection with crowded and prominent lower teeth, or those marked cases of bimaxillary protrusion which are not usually noticeable until ten or twelve years of age, and which seem to increase in prominence during adolescence.

There is every reason to believe from the most advanced authorities upon biology that the bones of individuals cannot be forced to *grow* larger than their inherited sizes, nor would they have ever grown larger than any primitive fixed state, had it not been for the laws of *natural variation* and “survival of the fittest.”

The following quotation from Stackpole’s “Biology,” should forever set at rest the fantastic theory of “bone growth.” “*It is well known that all plants and animals have a definite limit of growth.* From the cytological point of view, the limit of body-size appears to be correlated with the total number of cells formed rather than with their individual size. This relation has been carefully studied by Conkline, (1896) in the case of the gasteropod *Crepidula*, an animal which varies greatly in size in the mature condition, the dwarfs having in some cases not more than one-twenty-fifth the volume of the giants. The eggs are, however, of the same size in all, and their number is proportional to the size of the adult. The same is true of the tissue-cells. Measurements of cells from the epidermis, the kidney, the liver, the alimentary epithelium, and other tissues, show that they are on the whole as large in the dwarfs as in the giants. The body-size, therefore, depends on the total number of cells rather than on their size, individually considered, and the same appears to be the case in plants.”



## CASE REPORT\*

BY GRAFTON MUNROE, D.D.S., SPRINGFIELD, ILL.

THE case here shown is one exhibiting the result of delayed extraction of deciduous teeth and impacted supernumeraries. The patient is a girl of twelve years of age.

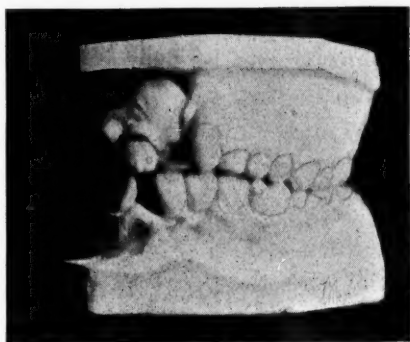


Fig. 1.

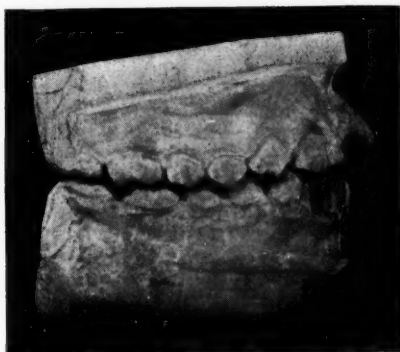


Fig. 2.



Fig. 3.



Fig. 4.

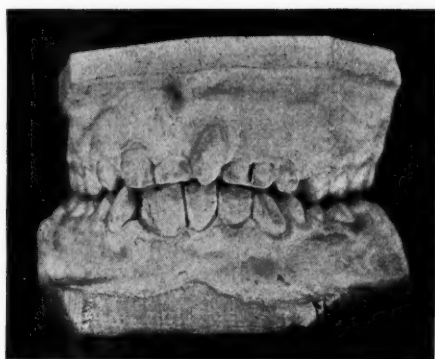


Fig. 5.

\*Reported before the American Society of Orthodontists, April 5-7, 1920.

The illustrations show the following condition: Fig. 1, frontal view, shows the maxillary left central (permanent) erupted between the deciduous teeth (central incisors), and standing in torsion (about at right angle).

Fig. 2 shows maxillary right lateral and canine in position, but no right central—being a profile view and showing the deciduous central still in place.

Fig. 3, made from x-ray pictures, shows the right central hindered in its eruption by a supernumerary and the supernumerary held back in its eruption by the deciduous central much delayed in extraction. The extraction of the deciduous incisors allowed the permanent teeth to advance so that the supernumeraries could be reached surgically and extracted. After the rotation of the maxillary left central, the permanent lateral and canine came into position, but there developed a wide space between central and lateral, and the cause proved to be another supernumerary, as shown in Fig. 4.

Fig. 5 exhibits a two-thirds profile and front view—with both centrals nearly in normal position—the case still being under care.

## THE LINGUAL EXPANSION WIRE\*

BY DR. ALLEN H. SUGGETT, SAN FRANCISCO, CAL.

THE lingual expansion wire as perfected by the technic of Dr. John Mer-shon is the longest step in advance that has been made in the mechanics of orthodontia, since Dr. Angle offered the D Band and the expansion wire.

It is as big a leap beyond the appliances in use today as the expansion arch and D bands were beyond the plates and screws and ill-fitting bands in use at that time.

First, the materials for the bands are nearly perfect, made of iridio-platinum, which is so stiff and strong that it can be used as thin as 38 gauge and will spring over the contact point and fit as accurately as it is possible to fit a tooth that has not been trimmed.

Second, by following the technic, the whole appliance can be made on the model, thus saving the strain and worry of fitting bands to a resisting patient.

Third, it is constant in its pressure.

Fourth, it is clean and eliminates 95 per cent of the danger of injury to the teeth.

Fifth, it is out of sight.

At the first visit of the patient, take impressions as usual for your regular models. At the same time take another set of impressions for the models on which the appliances are made. Take these impressions just like the first ones except that you need only enough plaster to take the molars well and the lingual aspect of the rest of the teeth. You need pay no attention to the buccal surface of any of the other teeth as this model is to give the measurement for the molar bands, and the lingual surface of the other teeth for the fitting of the lingual wire.

When you get the models from these impressions, trim away the plaster or tooth on each side of the molar just down to the contact point but no farther. This is very important. Be careful to preserve the contact point for it is at this point that the wire measurement of the tooth is taken. If you obtain an accurate measurement of the molar around the contact point you have the only measurement required. This measurement is the largest circumference of the band. If you follow Mer-shon's technic carefully you will have a perfect fitting band. Take this wire measurement, lay it on the band material and make a scratch. As this scratch is the largest part of the band, extend this scratch across the band material on a slant making the other side shorter. Then cut the material off one millimeter longer than this scratch, but on the same slant. Lap the band to just cover the scratch and solder with 22k. The band then should go down on the tooth just to the con-

\*Read before the Pacific Coast Society of Orthodontists, Portland, Oregon, Feb. 16-18, 1921.



tact point. Now shape the band with the contouring pliers which will give it the shape to slip over the contact point and fit the gingival portion of the tooth. Put the band on the tooth, the soldered side to the sloping side of the tooth, which is the buccal side of the lower and the lingual of the upper. Trim the tooth and push the band down to place. You should now have a perfect fitting band. If it is by chance too large, cut it in two near the original lap, lap again and solder. Follow Dr. Mershon's technic which is very clear on these points as to the fitting of the lingual wire and spurs, and you will have no trouble in constructing a perfect fitting appliance. At the next visit of the patient, they can be adjusted to the teeth in a few minutes and the patient dismissed for one month, with perfect assurance that the patient will be comfortable, the mouth clean and the appliance working every minute.

#### DISCUSSION

*Dr. Chas. C. Mann, Seattle, Washington.*—It is probably apt that I discuss this paper, inasmuch as I prepared a clinic on Mann's version of Mershon's technic, and have models for the purpose of illustrating that technic this afternoon. I have changed the technic as outlined by Dr. Suggett, in that I use coin gold instead of the iridioplatinum. His statement, however, that the materials for the bands are nearly perfect is probably correct. Personally, it proved a little imperfect in my practice, and I changed to coin gold, and use the technic to accommodate that material. Dr. Suggett takes these impressions in plaster. I, with several other men, use the new compound, furnished by the Supply Company of London, England. This material springs pretty nearly back into position when removed, provided its consistency is correct when it is used. Have the assistant manipulate the material until it is of the right consistency. The color when first obtained is yellow; after working to proper consistency it is a creamy white. Lately, I have been making use of partial impression trays for obtaining the impressions for the making of molar bands. Those trays are of two types; one for the upper and one for the lower. For the lower, I use Blue Island trays Nos. 80 and 81. With these trays I can get a definite impression of the molar teeth with no drawing, such as you have in making an impression of the whole denture. By the old method wherever the tooth is inclined lingually you will have a drawing on that side, but, as I say, with the use of the partial trays you will have practically no drawing in the impressions at all. Dr. Suggett says he trims the impressions to the contact point. I go beyond that point, cutting the tooth absolutely out of the plaster as nearly to normal tooth form as my knowledge of tooth anatomy permits. I make a wire measurement at the contact point of the tooth. In many cases you have broken down temporary teeth, sometimes permanent ones, approximating the mesial surface of the permanent molar. Then you have to utilize your knowledge of tooth form, in order to trim that tooth to its proper contour and produce your contact point. And so, I follow out the plan I have indicated. This was called to my attention by Dr. Baldwin of Spokane. The method is that followed by Dr. Mershon, to a great extent. Having made the measurements, we cut the gold to its proper width and bevel it at one edge, or cut off at an angle of say 45 degrees. Then the measure is made for the left band, laying the vertical cut to the left, and making measurement on the long portion of the band, and marking an inclined mark toward the left on the right side of the band, cutting a millimeter beyond that for the length of the band, and then soldering. I agree with Dr. Suggett in the reason he has given for the use of the lingual arch. I have found that finger spring is probably the biggest factor, and I am trying to work out the technic for the use of that spring. It is a difficult thing to master, but it will produce wonders in tooth movement. The work can be done almost without any disfigurement of the patient. We find in Seattle that patients like the lingual arch. Others like it, and we like it. I thank you.

*Dr. R. S. Baldwin, Spokane, Washington.*—I employ the method of taking two sets of impressions at the start, possibly because I am lacking in the 100 per cent efficiency of fitting bands on plaster models. I also take a third set of impressions for this reason. Just as Dr.

Mann has said, you sometimes have to assume approximal contacts and mesio-distal diameters, and cannot always make an accurate set of bands. When the patients come, I take the bands that were constructed on the models and fit them on the teeth. The bands may be a little too large or too small, so I open or close the seam as is required. Whenever you refit a band there is a slight change brought about which affects the mesio-distal position of the lingual tube, which is soldered in place at the time the band is made. So when the bands are accurately fitted in the mouth, I take another set of impressions in modeling compound with the bands on the teeth. Then I remove the bands from the teeth and set them into the impression just taken and run up the model. By this means I have the bands on the model exactly as they fit in the mouth. By making the arch on this model and carefully annealing it, and after transferring the bands from the model to the teeth and cementing them in place; you will obtain absolute accuracy in the adaptation of the arches in the mouth. This method may require a little additional time, but it gives the assurance that the arch as it is applied in the mouth is identical to the fit obtained on the model. In regard to carving teeth, it is acknowledged that a molar tooth on one side of the jaw should have the same mesio-distal diameter as the corresponding tooth on the opposite side. If the circumference of one tooth varies from the normal of the opposite side, select the more accurate tooth and make both bands from this measurement.

*Dr. E. C. Read, Long Beach, Cal.*—I have been using Dr. Mershon's technic with some modifications. I have been making bands directly over the teeth in the mouth, securing a separation at the first visit, then taking a measurement over the contact point, and fitting directly to the tooth at the second sitting. After fitting bands I take the impression, then place bands in the impression, and before pouring the model, I flow a thin film of wax around the inner side of the band, and after you have run the impression and made the models these bands may be removed from the model and yet they go back to place very accurately. After removing the band from the tooth you can take your time and solder the lingual tube, as you wish it. After placing back in position you are ready to trim and fit your lingual arch. I never succeeded in fitting bands over plaster models very accurately.

*Dr. Mann.*—I want to suggest to Dr. Read that the technic of making the bands on the models will save him more time in actual contact with the patient than he probably realizes now. I doubt whether I give in the full adaptation of two lingual arches more than an hour's time to any one given patient. That includes taking impressions, final fitting of bands, cementing, and adjusting the appliances. Of course, some time is required at the bench and by your assistant in the making of the model.

*Dr. W. R. Dinham, Portland, Oregon.*—Dr. Suggett's paper suggests this question: Why is it necessary to wait a month until the patient is seen again? I understand from Dr. Mershon's technic that the lingual wire should be adjusted and placed in the mouth in a dormant position, with no stress against the teeth until the patient becomes accustomed to the appliance. So, I do not understand why it is necessary to wait a month before an adjustment is made. I find a week's time is usually sufficient for the patient to become accustomed to your appliance, especially where there is no spring to the wire.

*Dr. William C. Cavanagh, Portland, Oregon.*—I am following nearly the same technic as Dr. Read. I prefer to devote an hour to the patient in the chair, and fit my bands to the teeth. If I were to use a metallic die I think I could make as good a fit over that, as on the tooth, but I have never succeeded in fitting bands to a plaster model as accurately as I can in the mouth. I follow Dr. Read's method as outlined in the use of a thin film of wax. This enables you to slip the bands on and off the tooth as often as you please in making attachments to the bands. I wish Dr. Suggett had some of my patients, and would put lingual appliances in their mouths and dismiss them for a month just to see what might happen. The advantage of the lingual appliance, as I understand it, is to conceal the arch. If I am granted the privilege of attaching a band now and then to the temporary canine so that I can anchor the expansion spring, so that the spring itself will not move gingivally or incisally, I will dismiss the patient for a month and take a chance. There is no place to rest that finger spring against a temporary canine, so that it will not be apt to slip one way or the other. I think we must take our patients into consideration; their nature, and how responsive they

are to suggestion, before we put on these lingual appliances. I do not think the nature of the patient will always permit the use of that appliance. I am not wedded to it.

*Dr. Mann.*—I want to go back to 1910, in New London, Conn., at Dr. Angle's meeting. He was discussing, and I was listening, as to how success came to a man in the practice of orthodontia, and, of course, being a young chap in the business, I was trying to get all the information I could, as to how I could succeed on the Pacific Coast. We were working on the plain arch. He said, "Doctor, you must combine with what we have given you in orthodontia, plain, ordinary, common sense.

*Dr. Cavanagh.*—Has anyone said we can get along without that with any kind of appliance?

*Dr. Morehouse.*—I would like to say a word in this connection. I had the opportunity of seeing at first hand Dr. Mershon's technic last year in the fitting of bands. Like the other two gentlemen, I either have not been faithful enough, or have not had patience enough, to work out the technic of that indirect method, as the dentist would call it. I have found I could fit the band just as accurately to the tooth, and I prefer to do so for more reasons than one. First, I do it, if for no other reason, because I like the contact with my patients, I like their sympathy and cooperation. I like to get in touch with them, and I do not think there is any better way than at the first one or two appointments with the little patients you shall spend the time in fitting bands. I think you have a far better opportunity to gain their confidence in this way, than by taking an impression and fitting the bands on the plaster model. After gaining their confidence you can do anything you please with your patients.

*Dr. Mann.*—The thing I have noticed in band technic is that with the most careful trimming of the model the final fitting has to be done on the tooth. Every band I place in the mouth has a final fitting on the tooth. The patient is called to the office, and the band is placed on the tooth and drawn tightly around to the gingival margin. It is then taken off drawn to the proper mark, and soldered. This method insures in my practice as perfect a fit around the neck of the tooth as I can hope to get. Dr. Morehouse speaks of gaining the confidence of the patient. In my experience the less I hurt them, the more I gain their confidence.

*Dr. Baldwin.*—There was a point made by Dr. Suggett, namely, that the patient be dismissed for a month. I had the opportunity some years ago of being in Dr. Mershon's office, and he impressed on me that with the lingual arch there is a great tendency to overtreat a case. The lingual arch is so constructed that it contains a great amount of latent force, and even at the first application, if it accurately approximates the teeth, you will get a response and just how long that force will continue to operate can only be ascertained by extended observation of the efficiency of the wire. The adjustments average from nine to fifteen a year; three weeks to six or eight weeks apart, according to the type of apparatus he uses, the number and position of finger springs, and the necessity for the movement. Dr. Suggett has made a good point, namely, that it is better to let the patient go two or more weeks, after the application of the arches before calling him in and adding to the force by further adjustment. When patients have been absent from four to six weeks, I have noted with surprise the result accomplished, and I have told them upon their return that they have done better out of the office than in it. So you must be careful and not crowd the force too much, as there is a lot of energy stored in the arch that will work out in time. As to making the bands on models, I found Dr. Mershon at one time went to the trouble of making metal dies. He gave this technic a thorough try-out, and I believe is now back to the plaster tooth, on which he fits the bands. The difference in results in bands fitted on the plaster tooth and those fitted on a harder material does not warrant following the more difficult technic required to produce a more permanent model. As Dr. Mann has suggested, technic and common sense will overcome many difficulties, and the work may be mastered in either hard or soft material.

*Dr. Wentworth, Everett, Washington.*—A great deal has been said about the method of making bands and the accuracy of them. Not much has been said about the accuracy of your impression. Dr. Suggett referred to prosthetic dentistry, and I will do the same. I put in two weeks with Dr. Tench in New York about two years ago. In order to get the fine lines

of the interproximal copies of the teeth and the gingiva he gets his model compound into working condition, and then holds it over a Bunsen flame, softening the surface, and tempering it before inserting it in the mouth. Thus the surface is so pliable he gets all the variations of the tissues more accurately than would otherwise be possible. Regarding the cooperation of your patient from the actual contact of fitting the bands in the mouth, I think the energy that the operator conserves in working indirectly more than compensates for loss of contact with patient, and if you want to get the confidence of your little patient from contact, adapt your bands after you have made them indirectly, and fuss around a bit and get acquainted, and gain his confidence in that way, instead of working for him all the time. They like to visit a little. Another point I will mention. I may be awkward, but if you will notice in fitting the shaft to the tube you have a lot of difficulty in inserting and removing it. Using your pliers to do this, as you do, you are likely to stretch your tube more or less. If you will use a little cold cream on the shaft you can remove and insert it easily.

*Dr. Scott*, closing discussion.—Much that is of interest has been brought out, and I would respectfully suggest to the program committee for next year that in order to straighten out some of these matters that every man bring a set of models, impressions, etc., to the meeting and let us find out how each man does his work. Some of the things brought out last year we have relegated to the scrap heap already. This technic, according to *Dr. Mershon*, is a simple thing, and I have the impression some of the men have not mastered it. The impression is taken in plaster. If there is a better impression material on earth than plaster I do not know of it. Now, to get the accurate measurement of the tooth, cut down to the contact point, so that the wire will go around the tooth at this point, and here you get your measurement. The band is made as long as that measurement. The tooth is not trimmed down, as described here this morning. This was pointed out last year at the San Francisco meeting. There is no particular reason for waiting a month for the second appointment, except to let your patient get used to the appliance. The appliances are put on very loosely and carefully at the start, so the patient will get used to them. We use the .036 gauge wires when it is to extend from first molars, but .030 when it extends only from baby molars.

*Dr. Mann*.—On the upper as well as on the lower?

*Dr. Scott*.—Yes; for finger springs we use the 020 wire.

*Dr. Mann*.—I use the 022, and 025 for finger springs.

*Dr. Scott*.—I see no reason for using the harder model substances on which to fit the bands. I believe it was *Dr. Kelsey*, of Baltimore, who advocated dipping the models in paraffin and putting talcum on them which gives a very nice surface. As to the matter of the shaft fitting the tube, where they are made to fit each other snugly, as they should do, we use a vaseline flux on the shaft which lubricates it enough to cause it to go into the tube.

Further discussion of *Dr. Suggett's* paper, by *Dr. Baldwin* of Spokane.

Another development I have been following is this: *Dr. Mershon* has modified the present shaft and tube with the acute angles on the flat edges, and has secured tubes beveled, so to speak, at the corners, so that there are no acute angles. You can refer to *Mershon's* modification of the shaft and tube in your order, if you wish to obtain these shafts and tubes with the rounded corners. If you request them fitted, the manufacturer will pumice them down so they will slide on easily.



## A LATER TECHNIC FOR HANDLING IMPACTED CUSPIDS\*

BY DR. HOWARD DUNN, SAN FRANCISCO, CAL.

THE presentation of this subject to you will be merely a brief description of a technic for handling impacted canines which differs slightly from the plan generally used. I lay no claim for originality of it.

The technic which I will present has a number of advantages—it will give us what we all try to avoid in our everyday practice; namely, (1) A tooth in position without mutilation. (2) It can be used in at least four out of five

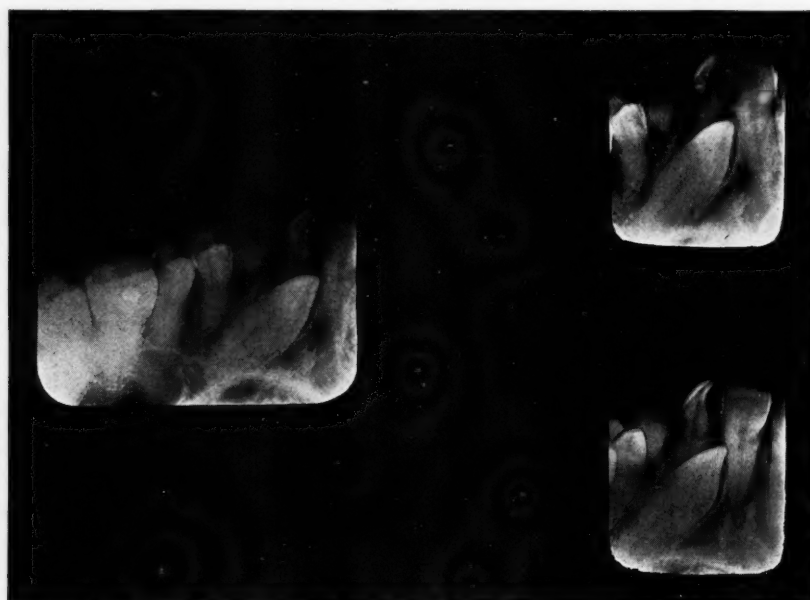


Fig. 1.—Showing case of impacted canine in its original position taken at 3 angles to locate its exact position.

cases, which to my mind is a fair average. (3) No more force can be applied than is necessary to gain a physiologic tissue regeneration.

I will now take up the description:

The impacted canine is located by the usual radiographic methods ascertaining its relative position, aided by palpation. After the part has been anesthetized an incision is then made over the tooth. The tissues are then packed with gauze which has been dipped in a saturated solution of tannic acid in a compound tincture of benzoin. This compound has the effect of stopping hemorrhage, allaying the secretions which are most troublesome in this operation, and also acts as an anodine to the tissues as well as keeping the wound clean by sealing it. The gauze now placed is held in position

\*Read before the Pacific Coast Society of Orthodontists, Portland, Oregon, February 16-18, 1921.

by means of a looped finger or auxiliary spring soldered to the labial or lingual wire according to the selection of the operator.

An impression is now taken of the opposite canine, if in place, and the patient dismissed for a day or two. A model is made and by means of the addition of a little plaster and by dressing and shaping, it is made to resemble the impacted canine. Reference to the radiogram will enable one to approximate it sufficiently.

If the opposite tooth is not in position a tooth from another model may be selected and trimmed or built up to resemble the impacted tooth or at least that part of it which is to be utilized.

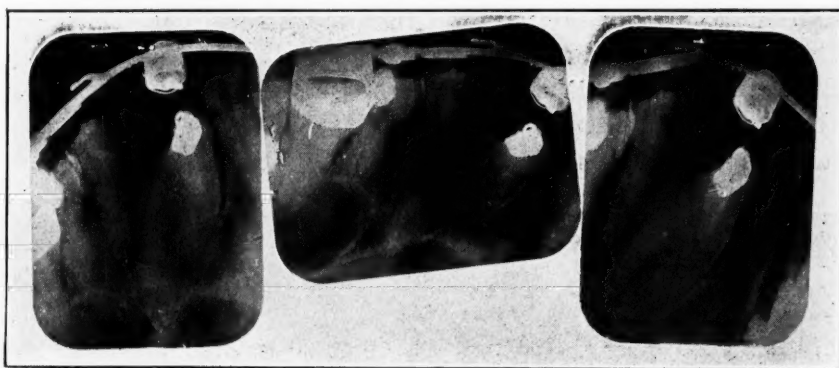


Fig. 2.—Showing same case as Fig. 1 with cap in position and use of ligature attached to the labial arch.



Fig. 3.—Showing same case as Fig. 2 using lingual arch with auxiliary spring.

Having the model prepared, a Melott's die is made, and a cap, only large enough for the angle or cusp is struck upon the portion analogous to that portion of the tooth to which the operator is to cement the cap. An eye or hook is then soldered to the top of the cap to engage the silk ligature or auxiliary spring.

At the next sitting of the patient, the dressing is removed and another placed for a day or two. Generally the tooth will be sufficiently exposed to enable the operator to cement the cap in position. If a little more exposure be desired packing around it with cotton pellets while the patient is in the chair will suffice.

The section of the tooth exposed is then dried by the assistant and kept

dry while the operator spatulates the cement. Here let me advocate the use of Ames' special crown and bridge cement.

If well spatulated on a large surface with a copious amount of cement it will give a very adhesive and creamy mass which will set rapidly when placed on the tooth—an advantage very much desired.

A point that I omitted is to take a small mounted stone and roughen very slightly the enamel of the tooth; this gives a better surface for the cement to adhere to as well as removing the investing membrane which covers an unerupted tooth.

A copious amount of cement is placed in the cap and the cap grasped by means of the Howe plier, engaging the eye or hook which has been soldered thereon. The approach must be such that the tissues will not interfere and such that the operator may have a firm and steady hold, as it is necessary to press the cap until the cement has set. During the setting the assistant should remove the surplus cement.

After the cement has thoroughly set, the wound is again packed and

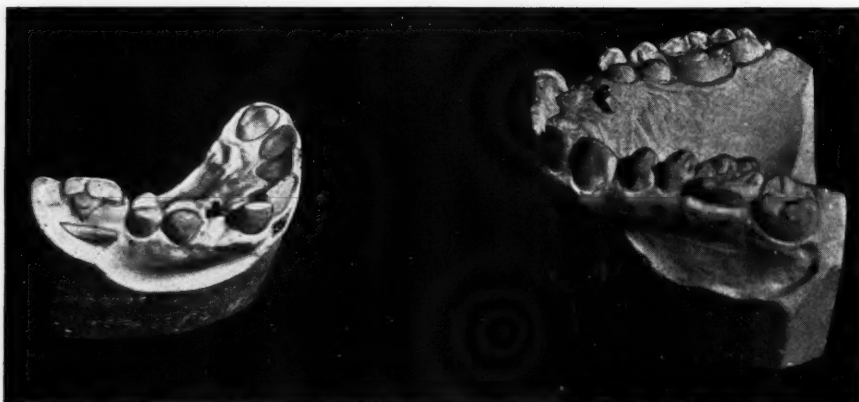


Fig. 4.

Fig. 5.

Fig. 4.—Showing same case as Fig. 3. The cap in its relative position as seen here after the tooth has erupted through the soft tissues.

Fig. 5.—Showing another case with the cap and a portion of cuspid exposed.

the patient dismissed until the following day. At his return the operator may ligate the tooth to the arch with a silk ligature using only enough stress to remove all slack from the ligature. Allowing for the shrinkage is all the force necessary to bring these teeth into position. If preferred an auxiliary spring with slight pressure may be used in place of the silk ligature—the latter to my mind is as effective and much more cleanly. In cases where the impacted tooth lies exceedingly deep in the soft tissue this method can hardly be advocated.

It may be well to state that a second and sometimes a third attempt may be necessary before the cap adheres, but the time taken is nil when we consider the final result, with the tooth in position, not mutilated and with little or no chance for devitalization.

A few models together with x-rays will be shown later of cases under treatment demonstrating various stages of the technic.

I hope this will at least meet with your approval and consideration.

DISCUSSION

*Dr. E. C. Read, Long Beach, California.*—I do not think I can add much to the paper. The method as I see it is certainly unique, and should be useful if we can do it. The difficulty of the technic, I think would be to get a cap that would fit sufficiently accurately to these impacted canines to enable us to cement them to position. If you can do it you save mutilation, and there would be no objection to it, of course. The only difficulty is the time and trouble involved in securing it to place so that it will remain. In speaking of devitalization due to mutilation, I wonder whether we have not gone too far in inserting the pins, in drilling too large a hole, and drilling too deeply into the dentine. This is the method I have followed in a few cases in my limited experience. In these cases, I do not think any of you would see any danger of devitalization or that the teeth were in any sense mutilated. I use a soft gold pin of about 22 gauge, and when that is bent and cemented in place it need not go far into the tooth. You need not have the hole much larger than the body of a pin. With a small drill you can drill through the enamel and then with a small bur, drill to a depth of about one to one and one-half millimeters. The pin can usually be placed on the lingual surface of the tooth. If the tooth is so difficult of access that you cannot tell where you are drilling your hole, and do not know whether you are getting into the root or crown I do not know that there would be much advantage in the cap in such a case. I think if I wished to use a cap I would attempt to get an impression of the tooth with a pencil made from modeling compound and from the model thus secured would try to cast or swedge a cap. Dr. Engstrom will perhaps tell us something about this.

In regard to the use of the finger spring, Dr. Dunn has suggested something very nice for holding the packing in position. I have used the lingual arch for bringing these canines into position by extending an arm of 21-gauge wire over or between premolars to the buccal, and to that soldering a spring of .020 wire. This spring not only gives an opportunity for bringing the tooth downward, but also carrying it buccally to its position as you bring it down, by merely ligating or carrying the .020 wire above the hook on the canine tooth.

*Dr. W. E. Newcomb, Cleveland, Ohio.*—Like all of you, I assume, I have tried out in the last fourteen years numerous methods for moving impacted canines. The method I now use is original with Dr. Bowman, I think, at least he gave me the technic. It has been some years since I have used either a pin or cap on a canine in this work. The method necessitates uncovering the canine very freely. The molar bands to carry the lingual wire have been previously prepared, and after the canine is surgically uncovered the molar bands are placed on the teeth. The malposed canine is now plainly in sight. Then with a modeling compound pencil, sharpened, and a tray of modeling compound ready, the pencil of softened compound is pressed onto the exposed surface of the canine, and then the tray is inserted and forced home. This gives an impression with the bands in place, and a very definite impression of the canine to be operated upon. I have taken plaster impressions with satisfactory results. The form of the lingual wire depends largely on the location of the canine. Frequently I run it almost straight from one canine to the opposite first premolar, and simply get a finger spring down under and behind the canine, which can gradually be lifted and moved in the desired direction. Later on there is no objection to placing a cap on it if you so desire. In the first three to six months you can move it enough with the finger springs to greatly simplify the placing of a cap or band. When you lay down the appliance there is a very definite model of the canines, so that the finger springs can be accurately placed. I sometimes use a simple spring, but lately I have used a coil spring, soldered to the main body of the lingual wire, winding about it several times, using 24-gauge Aderer's No. 4 wire; as the canine area is reached the spring terminates in a "U" which engages the palatal surface of the canine. Pressure can then be applied by opening the coiled spring or by soldered extensions.

*Dr. Engstrom.*—I believe the method to be used should be determined largely by the position of the impacted or unerupted canine. The method of using the cap is indicated in specific cases. Dr. Read has partly explained the method I use in obtaining a close fitting cap. I am positive every time I make a cap that the cap is going to fit a particular portion of the tooth. It is somewhat of a guess. So it is often in drilling a cavity for the reception of a pin. In the deep-seated impactions that were mentioned by the essayist as being con-



traindicated, I find just the indications for the use of a cap. To make a close fitting cap an impression of part of the crown of the malposed tooth is taken. No other tooth can be used. An impression can be easily taken by the use of modeling compound in the form of a pencil, softening the end and pressing it to place. A die is made and a cap made from this die. In cementing that cap to the surface of the tooth it is necessary that the surface be clean, that it be as dry as possible, and be kept so. I have had no success in placing the cement in the cap only and then carrying the cap to the surface of the tooth, but I have had success in cases wherein I placed the cement on the tooth surface and in the cap also and then put the cap to place. I think this matter was taken up at the Eastern meeting in 1918.

*Dr. Newcomb.*—I might make a suggestion as regards the packing of the wound. It is necessary to hold the wound open a day or two. My most satisfactory results are obtained by a large pellet of cotton dipped in sandarac varnish. The sandarac gum is dissolved in grain alcohol. Thus you secure a sterilized solution, and the moment it strikes moisture it solidifies and forms a beautiful plug. In 24 to 36 hours you have a perfectly clean wound and one that is wide open.

*Dr. Engstrom.*—I have used a plug of gutta percha.

*Dr. Newcomb.*—Try the sandarac.

*Dr. Engstrom.*—I have, but have considerable hemorrhage upon removing the cotton.

*Dr. Newcomb.*—If you remove it in twelve hours that is true. You can leave it two or three days to better advantage.

*Dr. Engstrom.*—I use a piece of gutta percha, because it presents a smoother surface to the wounded tissue, and holds it in position with a wire extended from the arch wire.

*Dr. Newcomb.*—You do not need any spring at all.

*Dr. Cavanagh.*—I would ask Dr. Newcomb if in placing the spring around the canine he is ever troubled on readjusting the spring with the soft tissue growing over the canine? Is it ever necessary to reopen it and thus cause hemorrhage, etc.?

*Dr. Newcomb.*—I have had some soreness but never a hemorrhage. I do not conceive any particular disadvantage in removing the tissue there. If a tooth is away out of the course it will ultimately occupy a considerable amount of tissue may be removed palatally to the root of the central incisor. I have the oral surgeon remove this tissue very freely.

*Dr. Allen E. Scott.*—I wish to express my appreciation of Dr. Dunn's paper. It has taught me several things. Wherever it is possible to put a cap on a tooth I think that undoubtedly the proper procedure. I do not believe in drilling holes in these teeth if it is possible to accomplish the same thing in any other way. I do not like the idea of removing a large amount of tissue, such as Dr. Newcomb has mentioned. If it regenerated, all right, but if you move the crown out, and there is not enough tissue there to hold the root you are apt to get into trouble. I recall a central incisor where we operated, and put a pin in and drew the tooth down into place. We had the lingual surface where the labial surface should be, and we had to turn it all the way around. The tooth now is in proper position and has been turned entirely around, but the tooth is not a solid tooth. Whether it will ever be tight I do not know.

Dr. Dunn spoke also of roughening up the tooth with stone in order to make the cement stick. I would take exceptions to that. It is not necessary. You can roughen the band, but I do not like the idea of roughening the tooth. If the tooth is roughened up much it leaves it open to the liability of decay.

## DEPARTMENT OF ORAL SURGERY AND SURGICAL ORTHODONTIA

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### TREATMENT OF A DENTAL ABSCESS\*

BY A. R. MENZIES, D.D.S. (PENN.), L.D.S., R.C.S. (EDIN.), L.D.Q. (QLD.),  
BRISBANE

I AM here at the invitation of your Society, extended to the Odontological Society, for one of its members to read a paper on some subject of mutual interest.

It gave great pleasure to the President and members of our Society to receive the invitation, which was immediately accepted.

At the President's request I undertook to write the paper, the subject matter of which is the treatment of a dental abscess.

This subject has been repeatedly threshed out in every dental society for the past few years and it is only presented to you tonight because it was one of the subjects suggested to us in your letter of invitation. Hence no apology is necessary. I trust that the discussion which I hope will ensue, will be instructive to us all.

I have purposely left the paper with a great deal to be said and would be glad if other dentists present would add any particulars of special interest.

In presenting this paper to you I am taking up the attitude that a great deal of the subject matter is common knowledge to both the medical and dental professions, therefore I have purposely omitted a great deal of the fundamentals, such as detailed descriptions of anatomy, pathology and the allied subjects, as it would only be an infliction and tend to weary you. Consequently, if my remarks appear to lack a great deal of these details, I would have you remember that I consider them as understood.

Abscesses originating on teeth are invariably considered by the medical fraternity as a purely dental matter and as such are quite rightly referred to the dentist for attention. It is only within the last few years that the medical profession has attached any importance to this pathologic disturbance, fol-

\*Read at a Combined Meeting of the Queensland Branch of the British Medical Association and the Odontological Society of Queensland on October 1, 1920.

lowing on the researches and writing of some of the most prominent members. When a patient presents himself for medical examination, the doctor usually inspects the teeth and, provided he is unable to diagnose the particular ailment and he thinks the teeth may have something to do with it, he refers the patient to the dentist to see if the latter can discover anything wrong. Numerous eminent medical scientists, as Hunter, Rosenow, Mayo, etc., have been for years writing and lecturing on the dangers of focal infection and calling special attention to the oft overlooked one of dental origin, hence it is not surprising that your Society is anxious to have a discussion on the subject.

Dentistry in the past has been a profession in which manipulative dexterity has taken precedence over a knowledge of pathology. This accounts for the too frequently observed and sometimes brilliantly constructed pieces of restoration, covering and very frequently causing a state of pathologic iniquity unparalleled in the realms of surgery. But it is only just to the dental profession to state that its members are now just as fully alive to the mistakes of the past as the doctors and are anxious to convince the medical profession that dentistry of the future will be for the betterment of humanity, seeking out efficient methods based on strictly scientific knowledge.

Hunter, after years of research work, felt it his duty to step into the breach and call a halt to oral sepsis; the dentists have responded to his appeal.

It is not my intention to inflict a description of a dental abscess upon you, being well aware that that is a part of your professional knowledge, beyond the statement that I wish to draw your attention to the fact that there are at least two kinds of abscesses associated with the teeth. The more common variety is caused by infection from within the tooth and is known as an alveolar abscess. The second, known as periodontal abscess, is situated upon the specialized periosteum of the tooth (the periodontal membrane). It is caused by irritation and infection carried to this bone membrane by the circulation in patients of gouty diathesis.

#### ALVEOLAR ABSCESS—ETIOLOGY

The exciting cause of an alveolar abscess is always a bacterium and its toxins conveyed *via* the interior of the tooth itself to the alveolar process. The predisposing causes are many: infection of the pulp and consequent death from caries, exposure of the pulp to the salivary contents either by caries or accidentally or intentionally inflicted, insertion of metallic fillings in too close proximity to the pulp, death of the pulp from chemical or thermal agencies, operation within the pulp canal in an attempt to clean it without regard to strict surgical asepsis, remnants of a dead pulp left within the canal, insertion of imperfect root fillings, the forcing of dead or putrescent pulp material through the apex of the tooth, involvement of a root from an adjacent tooth already suffering from an abscess. It may have a fistula and discharge into the oral cavity usually at the point of least resistance, or it may be of a type known as a blind abscess. An abscess may be either acute or chronic.

When the abscess has a fistula it is, as a rule, easy to locate, but it is not always wise to condemn the tooth over which the fistula appears, as it some-

times happens that an abscess discharges its contents at a considerable distance from the affected tooth, sometimes over a healthy one. The abscess with a fistula is the least dangerous type, as it discharges its contents into the mouth and is either expectorated or swallowed. This, of course, is bad enough, as it may cause alimentary disorders of various kinds, but the point I wish to bring out is that on account of the fistula the presence of an abscess is made known to the patient and dentist, consequently it is more likely to receive proper attention. It is the blind abscess, or, as it might aptly be described, the abscess "of internal secretion," which is the most dangerous and undoubtedly the cause of most of the troubles which can with accuracy be laid at the door of dental focal infection.

The toxic material is absorbed into the circulation and its effects are observed in many diseases of organs and tissues, the number of which is steadily mounting up as research work progresses. That "abscessed" teeth can be the cause of disease in other parts of the body is now generally accepted, but the debatable point is: Do all "abscessed" teeth cause metastatic infection in some other part of the body? My contention is that all "abscessed" teeth may cause infection, some immediately and others as opportunity occurs.

An "abscessed" tooth may be dormant for years and suddenly break out with startling results. Sometimes we observe patients with numerous abscesses and a septic condition generally, who otherwise appear to enjoy good health. Again, we observe patients with only one tooth seat of trouble, whose general health is completely disorganized thereby. The different theories advanced on the subject, immunity and susceptibility, are usually quoted to cover this. A great deal depends on the original health of the patient and the virulence of the organisms present. Certain organisms possess peculiar selective properties for certain tissues and organs of the body.

Sir William Hunter is very emphatic in his contention that "abscessed" teeth and oral sepsis generally do cause general infection resulting in a number of diseases, some of which previously had been of unknown origin. He says:—

My clinical experience satisfies me that if oral sepsis (and naso-pharyngeal) could be successfully excluded, the other channels by which "medical sepsis" gains entrance to the body might be almost ignored. Sepsis as an important and prevalent cause of disease in medicine would almost cease to exist, instead of being as in my judgment it is at the present time, a more important and prevalent cause of disease in the domain of medicine than it is in that of surgery.

Later on in his article, referring to gold crowns, etc., placed over roots, he says:

I speak from experience. The worst cases of anemia, gastritis, colitis of all kinds and degrees, of obscure fever of unknown origin, of purpura, of nervous disturbances of all kinds ranging from mental depression up to actual lesions of the cord, of chronic rheumatism, of kidney disease are those which owe their origin to, or are gravely complicated by, the oral sepsis produced in private patients by these gold traps of sepsis. Time and again I have traced the very onset of the whole trouble of which they complained to a period within a month or two of their insertion. The sepsis hereby produced



is particularly severe and hurtful in its effects, for it is dammed up in the bone and in the periosteum and cannot be got rid of by any antiseptic measures which the patient or the doctor can carry out. Moreover, it is painless and its septic effects therefore go on steadily accumulating in intensity without drawing attention to their seat of origin.

#### CLINICAL EFFECTS OF SEPSIS

The chief feature of this particular oral sepsis is that the whole of it is swallowed or absorbed into the lymphatics and blood. Unlike the sepsis of open wounds on the outside of the body, none of it is got rid of by free discharge on the surface. The effects of it, therefore, fall in the first place upon the whole of the alimentary tract from the tonsils downwards. These effects include every degree and variety of tonsillitis and pharyngitis, of gastric trouble from functional dyspepsia up to gastritis and gastric ulcer and every degree and variety of enteritis and colitis and troubles of adjacent parts, *e. g.*, appendicitis. The effects fall in the second place upon the glands (adenitis), on the blood (septic anemia, purpura, fever, septicemia), on the joints (arthritis), on the kidneys (nephritis) and on the nervous system.

The most intense anemia, blood poisoning, hectic fever and even ulcerative endocarditis may be produced by one deep-seated alveolar abscess. On the other hand, a man may have the foulest sepsis for years without apparently any ill effect, but he need not vaunt himself unduly upon this comparative immunity. Sooner or later his sepsis will find him out. For even if it does not itself produce definite disease of its own, it will certainly complicate any independent disease from which he may afterwards suffer and its effects, although unrecognized, may really constitute some of the most prominent features of his disease.

Both medical and dental journals have for some years been carrying on a crusade against oral sepsis. I know you are all well posted on this subject and I daresay you have all seen typical cases which undoubtedly have had their origin in oral sepsis and which have cleared up in an almost miraculous manner by simply extracting the offending teeth. If this success were repeated several times, it would tend to make you an advocate in the extraction of teeth whenever in doubt. The physician and surgeon are and have been for some time gradually adopting the attitude that retention of teeth is not absolutely necessary, especially when it comes to a matter in their opinion of deciding between the retention of bodily health and the retention of the teeth. They gradually and perhaps unconsciously come to value the teeth less and less.

The dentist, on the other hand, has been brought up and trained to save teeth in every possible way. The value of teeth to the patient has been drilled into him until he looks upon an extraction as a serious affair, due to ignorance on someone's part. In his attempt to save teeth, the dentist devised and carried out dental operations which occasionally resulted in various pathologic conditions and their consequent sequelæ. It is really these two almost divergent views held respectively by medical and dental practitioners, which in reality have brought on the study of oral sepsis and which are tending to

unite the two professions in a joint attempt to strike a middle course. The medical men have pointed out the evils of bad dentistry; as I previously stated they are gradually assuming the unimportance of retaining teeth of doubtful utility and the dentists are trying to perform dental operations which will retain teeth in healthy condition and thereby convince the medical man that it is not always necessary to extract when in doubt. It took the dental profession some time to realize that their conservative dentistry of which they had been so proud, had in reality been causing havoc to the general health. It was only by hearing and reading repeatedly of cases which had been conclusively proved to be caused by misplaced dental efforts, that a general effort is being made to perform dental operations which, like Cæsar's wife, "are above suspicion."

You no doubt would like to hear something of the methods the dental profession is taking to cope with the evil. As in everything, "prevention is better than cure." Dentists are now aiming at preventive methods. A dentist hesitates now-a-days before he opens a healthy tooth to remove the pulp in order that the devitalized tooth may be used as an attachment or abutment for retaining a mechanical appliance. He realizes that a great many of these teeth, which before they had been interfered with were perfectly normal, may later become the sites of abscesses and that the chances of performing the operation successfully are really more or less doubtful. Therefore he gives the matter serious consideration before interfering with a healthy pulp. Every dentist will tell you that he does less and less interference with healthy pulps as time goes on. Then, again, patients who make regular visits to their dentist who value their teeth, rarely find it a necessity to have pulp removed from their teeth, either healthy or otherwise. This preventive dentistry, when it can be properly carried out, comprises regular cleaning of the surface of the teeth and filling of cavities as they appear before they assume a large size. The occasion for pulp removal and consequent abscess formation rarely occurs, so that if everyone could be treated in this manner, there would be no need to fill roots or to treat abscesses. We all know that it is asking a little too much of human nature to expect everyone to conform to this counsel of perfection and so, like the poor, decayed and abscessed teeth and oral sepsis will be always with us. It therefore becomes necessary to devise and carry out correct methods of treatment.

The primary object of dentistry is to maintain the teeth in a healthy and useful condition. Decay must be prevented as much as possible by prophylactic methods. When decay does occur, early removal of the decayed portion and correct filling is necessary, so that exposure of the pulp may be prevented. When a patient presents himself with an exposed pulp, it is necessary to carry out operative methods to remove the pulp and to fill the root in such a manner that infection beyond the actual pulp canal does not take place.

These are briefly the prophylactic or preventive methods adopted in dentistry to maintain the teeth in as healthy a condition as possible. When an abscess has developed, various methods are advocated for dealing with it; these will be taken up later. In this paper it is not necessary to deal with

any of the preventive methods except that of preventing infection consequent on exposure of the pulp. A healthy pulp removed under strictly aseptic conditions, the root canal correctly prepared and a filling inserted which seals every part of the canal to the foramen should remain in a healthy condition throughout life. It should be borne in mind that this is not a "dead" tooth, because it still receives nourishment from the periodontal membrane, although the pulp has been removed. It is mainly because the operation of removing the pulp and replacing it with a suitable filling has not been carried out in a surgically aseptic manner, befitting the importance of the operation, that so many abscesses develop.

Then, again, when the pulp has been infected before removal, it is natural to infer that the tooth structure is also infected, as the dentine which encases the pulp is one mass of minute tubuli filled with an organic material.

Various methods have been advocated for sterilizing the tooth structure after the removal of an infected pulp, but the success of any of them is only in proportion to their penetration of the tooth structure. None so far has been shown capable of completely sterilizing the dentine *in situ*. To quote Prinz: "An incipiently infected root canal cannot be sterilized permanently by the antiseptic methods of treatment now in vogue. To completely sterilize an infected tooth root—basing our conception upon our present knowledge of antiseptic action—implies removal of the tooth bodily and thoroughly boiling it."

At the most, partial sterilization of the canal to a very slight depth takes place, but infection lies just beyond this line of demarkation. Test cases have been taken under various methods of treatment which show negative results to scrapings taken from within the canal for various periods after the institution of the treatment. But when the tooth has been extracted and ground up, virulent cultures were invariably obtained, showing that by any methods advocated the tooth remained more or less septic. This point should be borne in mind. Prinz holds that the great majority of reinfections may be explained upon the basis that the infective organisms have remained undisturbed within the body of the tooth structure and have escaped destruction during the alleged process of sterilization.

Arthur D. Black states that the percentage of abscesses for all root fillings was 45; for good root filling 9; for poor root filling 63. To Black it seems that no better argument could be found to induce dentists to be more painstaking in their root filling technic, for here is the opportunity to reduce the total alveolar abscesses to about one-fifth of the present number.

This examination by Black shows that for every 100 teeth which undergo the operation of root filling, abscesses develop in 45. This certainly is startling if we are to consider that the chances when a root is filled are equal whether there will be abscess formation or not. But his other figures which show that in 63 per cent of roots imperfectly filled abscesses arise, must impress everyone that there is no room in dentistry for poor root fillings. His remaining figures show that after apparently good root fillings abscesses develop in 9 per cent. This is probably accounted for by the fact that, although they appear to be perfectly filled, strict aseptic principles were not



rigidly carried out. A consideration of these figures would lead to the conclusion that this method certainly does not come under the heading of preventive measures. Results like these figures imply have caused a wave of intense feeling to spread through the dental profession; some dentists have stated that, provided a pulp has to be removed or a root filled, the tooth had better be extracted, as the chances of it doing more harm than good are too great. I think the better attitude to take up would be to improve the methods of root filling and thereby gain at least 91 per cent of successes.

The next question to be dealt with is whether it is advisable to retain or extract a tooth with an abscess on it. There is much diversity of opinion still on this subject, some holding that the patient should not be permitted to take the risks consequent on retaining a tooth with an abscess on it, others holding the opinion that an abscess can be successfully treated and the tooth retained in a useful and harmless condition. There are various methods of treating a dental abscess with the object of retaining the tooth. One of the first rules of surgery applies here, *i. e.*, establish efficient drainage. The drainage may be by way of the interior of the tooth itself (the pulp canal) or through a fistula, either existing or made for the purpose.

When the dentist considers that it is sufficiently drained, he usually attempts to sterilize the tooth and the abscess cavity by means of drugs, but as I pointed out earlier in this paper, it is impossible to sterilize a tooth completely *in situ*, therefore his efforts are only partly successful. He usually succeeds in making the tooth comfortable and useful, but undoubtedly the infected area is only lying dormant ready to spring into activity whenever the patient's vitality is at all lowered. It is only right to point out to the patient that an attempt is being made to retain the tooth in as useful a condition as possible, but that at any time he may have to lose it; he may then take the risks with his eyes open.

When an abscess develops on a tooth, that portion of the root situated in the abscess area is bathed in pus, is denuded of its periosteum and consequently may be considered as necrosed, the surface begins to be absorbed, leaving a very rough and uneven portion projecting. Even when the pus has been drained away and the area washed by suitable antiseptics, this necrosed portion of the root still remains as a foreign and highly infected body. With the object of removing this portion of the root after the rest of the tooth has been treated, the operation of resecting the apex has been introduced. Under as aseptic conditions as possible, the gums overlying the affected root are anesthetized by any of the several methods now in vogue and the gum opened and laid back, the outer plate of bone covering the root removed, with the periosteum previously peeled off, the necrosed portion of root usually about 1.5 mm. in length resected, the abscess wall curetted, then washed, etc., the final treatment varying from nothing at all to repeated packings every 24 hours until the cavity closes. This is, in my opinion, the most satisfactory treatment, but it must be borne in mind that the root is still infected and therefore its days are numbered. It is only advisable to perform this operation on the anterior or single-rooted teeth, as the risks of serious injury are too great for the dentist to attempt it on any of the multirooted teeth with rare ex-



ceptions. If only one root of a multirooted tooth is infected and the remaining root or roots are sufficient to retain and maintain the tooth in position and good condition, then the whole infected root may be resected and extracted, leaving the tooth supported by the other healthy roots. As a general rule it may be stated that any of the posterior teeth developing an abscess should be extracted, as it is practically impossible to treat them successfully; with regard to the anterior teeth, it is a case of "circumstances altering cases." When the rest of the teeth are in a bad condition and have to be extracted, then there is no need to attempt to retain it, or when, owing to the number, position and condition of the remaining teeth being unsatisfactory, extraction is advisable. In fact, it is usually advisable to extract it. But sometimes it occurs in the mouth of a person when the loss of a front tooth would occasion considerable distress and inconvenience. An attempt to retain the tooth under as tolerant conditions as possible would then be justified. A dentist hesitates before removing a tooth, especially a front one, when the patient still retains a full normal set, or when the removal of a tooth necessitates the wearing of a plate. These are all circumstances which influence the dentist and patient in taking chances. But when the patient is suffering from a disease which can have its origin from a dental abscess and which the physician or surgeon is confident is a probable cause of the trouble, than no consideration whatever should influence the dentist to leave the tooth in the patient's mouth.

#### DIAGNOSIS

Diagnosis of a dental abscess when a fistula exists or when excessive swelling is present, is an easy matter. It is in the case of the so-called blind abscess that a careful diagnosis has to be made. It is here that x-rays have played such an important part in dental diagnostic work. The doctor suspects the teeth after eliminating all other foci of infection and sends the patient to the dentist to be examined by x-rays. When it is a case of chronic alveolar abscess, the abscess area is radiolucent and shows up in the negative as a black spot on the root, but often in acute abscesses there is not sufficient rarefaction to cause this radiolucence; hence the negative result is not always conclusive. Again, what apparently appears to be an abscess on a tooth is sometimes a natural cavity thrown into the negative resembling a radiolucent area. Therefore, great care and experience is necessary in taking and reading x-ray pictures of the teeth. The experience gained by the earlier operators in x-ray work has been taken advantage of by the manufacturers of x-ray apparatus and at the present time special machines for doing purely dental x-rays are being supplied to dentists in thousands. To a certain extent they are still looked on as a luxury by dentists, but before very many years have passed they will be looked on as a necessity, just as the electric dental engine is now. When the skiagram fails to show an area upon the suspected tooth, other means of diagnosing are at the dentist's disposal. He may test the tooth for vitality by the electric current. If it is unresponsive, he may then open up the tooth and see the state of the interior. If the root is filled and

he still suspects the tooth, he may remove the filling and attempt to obtain a culture from the apical area just beyond the root.

All crowned teeth should be suspected, even if they do not show any radiolucent areas in the negative. Dr. A. Corton, of Trenton, New Jersey State Insane Hospital, has given up examining crowned teeth or bridges by x-rays, as after taking over one thousand he had not found a percentage large enough to justify the cost of films. He orders all crowned teeth to be removed.

I have been asked to say something on the subject of attention to children's teeth.

Nature supplies the children with a deciduous set of teeth to be used and retained until the permanent ones replace them. It is the dentist's duty to assist Nature in an attempt to retain these teeth in as healthy and useful condition as possible. The mother should instruct the children to cleanse their teeth regularly and when decay occurs or before, if the mothers are wise, they should be brought to the dentist and have any decay removed and suitable fillings inserted. Abscesses form in association with deciduous teeth more readily than in association with the permanent ones, hence it is imperative that all cavities should receive early attention and the exposure of the pulp should be prevented.

Dental work for children is certainly not looked forward to with any pleasure by the average dentist, partly because the children have not sufficient intelligence to value the work being done for them, partly because the child is very often spoiled and partly because the dentist has not acquired the knack of handling children properly. Certainly in most cases the dentist is not able to do dental work of the highest order. His main desire should be to keep the child comfortable and free from pain and abscess formation until he is able to do work of a more lasting nature.

When an abscess does develop (for it is generally this state of affairs when the dentist first sees the child), it is again a matter of circumstances altering cases. Very often the child is suffering intense pain; therefore the only humanitarian thing to do is to extract the tooth. But sometimes a fistula has developed and the tooth does not trouble the patient. In this case the view is held by many that it is unnecessary to extract the tooth, provided the mother keeps the discharge wiped away. The object in retaining such teeth is to secure a space for the succeeding permanent tooth. If the tooth were extracted, the space would close up, owing to the increase in size and number of the permanent teeth and consequently the successor to the extracted tooth would take up an incorrect position in the arch. It is rather a doubtful procedure. Many dentists extract the deciduous teeth when abscesses appear and consider the health of the patient of more importance than the regularity of the permanent teeth. Various writers state that children are not so liable to metastatic infection from abscesses around the teeth as adults are and consequently the matter should not be viewed with such alarm.

I should like to emphasize what apparently seems a little understood dental fact. Many mothers are totally unaware that their children have a permanent tooth at 6 years of age. I know that a good many doctors find a great difficulty in remembering the dates of eruption of the teeth; I am there-

fore seizing the opportunity to remind you that the average child erupts the first permanent molar at from 5½ to 6 years of age and that this tooth comes in while all the first set are still in position and does not replace any of them, but comes in immediately behind the first set. We dentists are weary of the sight of mothers bringing in their children to have this tooth extracted, thinking all the time it was a temporary tooth. The doctors have greater opportunity of seeing the parents and children about this age in their homes than the dentist has, because it is often too late when he sees them. It would be a blessing to everyone concerned if the doctors would point out this fact.

# ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

**Remote Manifestations of Focal Dental Infections.** R. Fernandez. Philippine Journal of Science, 1920, xvi, No. 1, p. 89.

The author emphasizes the great importance of chronic disease of dental roots for the origin of rheumatic joint affections, neuralgias, and numerous other organic diseases, upon the basis of the literature and ten personal observations. Root abscesses and pyorrhea alveolaris are especially significant in this connection. The former do not necessarily give rise to clinical manifestations, so that in certain cases a careful x-ray examination is required for their discovery. Photographic plates of suitable dimensions may be adjusted intraorally for this purpose, but as a large number of pictures is needed for a complete examination, the extraoral method is recommended, with which five pictures are sufficient. A dark shadow at the tip of the root is proof of the existence of an abscess, also when other symptoms are absent. The pathogenic agent of these chronic inflammatory processes is the streptococcus viridans, in the great majority of the cases. Aside from local treatment, the repeated injection of autovaccine (30 to 100 millions streptococci) is urgently recommended.

**Focal Infection in the Head and Its Relation to Systemic Disease.** C. F. Yergers. Illinois Medical Journal, 1920, xxxviii, No. 6, p. 509.

The most frequent focal cause of systemic infection is dental infection (25 to 90 per cent). The presence of dental focal infection is easier to diagnose than any other on account of the great aid given by the x-ray. There are two general sources of infection about the teeth, namely, blind abscess (apical abscesses or alveolar abscesses) and pyorrhea alveolaris. Pyorrhea is usually self-evident. All crowned and bridged teeth, devitalized and filled teeth, should be looked upon as greatly suspicious, until proved otherwise by x-ray films. A comprehensive dental report with x-ray findings should be made a part of each record whenever there is suspicion that the teeth may be the source of infection. Aside from prophylactic measures, active treatment consists in the elimination of the foci of infection by operative removal, although many cases are known to recover without the removal of the ap-



parent source of focal infection, after prolonged treatment. But these cases are especially apt to relapse and recur, thereby jeopardizing the health and future welfare of the patient. It cannot be too strongly emphasized that there is never any justification for permitting the continued presence of any recognizable focus of infection, which may immediately or subsequently have a direct etiologic relationship to some serious disease and thereby compromise the individual's health or even life itself.

From the historical viewpoint, it is of interest to note that in 1801, Dr. Benjamin Rush noted the clinical relationship between dental focal infection and arthritis; he recommended the extraction of an abscessed tooth in a case of arthritis of the hip, which resulted in an immediate cure. In 1875, Dr. John W. Riggs, a dentist of Hartford, Conn., called attention to pyorrhea alveolaris as a cause of systemic disease. The subject of focal infections was placed on a permanent scientific foundation by the pioneer work of Billings and Rosenow (1909).

**Dental Foci, an Etiologic Factor in Systemic Disease.** A. H. Ehrenelou and B. F. Loveall, U. S. Naval Medical Bulletin, 1921, xv, No. 1, p. 109.

Infectious foci located at the roots of teeth still often remain undetected, or even unsuspected, despite the growing recognition of their frequency by medical and dental men. Even after search, many offending teeth are passed by because of their apparent harmlessness; but an apparently sound tooth may nevertheless be productive of serious damage. By their peculiar relation to bone tissue, teeth present a direct avenue for bone infection. Every devitalized tooth, every crown, and in fact, any kind of artificial work on the teeth should be considered as a potential focus of infection unless proved otherwise by accurate technical means and procedure. The diagnosis should not be made from x-ray findings alone. The electric current and transillumination are valuable aids to determine the vitality of questionable teeth. Bacteriologic study will confirm the x-ray findings. As regards the correct interpretation of the pictures, a close study must be given to the white line made by the compact plate (peridental lamellæ) of the alveolus or the translucency of the peridental membrane. If this white line is followed carefully, it will be continuous, with only slight variations, around the whole root when in correct anatomic relation. But when there is disease present, it will appear first unduly thickened and then broken or obliterated. In this way both apical or gingival pathologic areas may be studied and diagnosed. In cases of long standing the wall of the abscess becomes dense in an attempt to wall off the infection. If there is no definite wall, the adjacent bone is becoming infiltrated and liquefied. When walled off the area is cystic, while in the latter case a granuloma of indefinite size or shape is formed. Around old devitalized teeth there are often seen heavy calcified areas which have been shown to be hypertrophic, due to continued stimulation by slowly progressing infection. Sections of this bone have proved to be bacteria-laden and are interpreted by some as foci of infection. The most thorough and positive treatment is surgical. Whether latent or acute, these local conditions should be treated as soon as discovered, since by acute infections the lowering of the general body

resistance may allow them later to associate their disease-producing power and in time cause long-standing chronic ailments. In this manner a vicious cycle easily becomes established in which an acute infection becomes the inciting factor.

The treatment as conducted by the authors, members of the Medical Corps and the Dental Corps, respectively, United States Navy, was guided by the axiom that the dentist's field primarily is the conservation of teeth to fulfil their intended physiologic function; only when their retention was a menacing factor to the general health, were radical measures adopted. No temporizing in serious cases should be considered. The cases quoted by the authors received no treatment other than the removal of dental foci, and none was indicated, as shown by the very instructive case of a young seaman 22 years of age, with acute inflammation and swelling of left knee and ankle joints. The tonsils had been removed some time previously, and the teeth appeared sound but radiograms showed marked granulomata at apices of upper right first molar, first bicuspid, and upper left first molar; these teeth were extracted and alveolus curetted. Swelling, joint tenderness and pain rapidly subsided so that patient was discharged to duty in two weeks.

**Observation on Dental Therapeutics Based on Clinical and Roentgen-ray Investigations.** W. M. Fine. New York Medical Journal, 1920, iii, p. 668.

In the author's opinion, too many teeth are extracted with a view to curing some obvious systemic disturbance, including that of the nervous system. For a few years past, he has witnessed the wholesale extraction of teeth, without noting a recovery from many of the diseased conditions attributed to the teeth. The successful demonstration of the same microorganisms in pulpless teeth and in arthritic joints does not necessarily mean that the teeth are the primary cause of the infection in all cases, without exception. On the contrary, the evidence rather points to the systemic disease as being responsible for the dental disturbance, although it is true that the extraction, or restoration to health, of badly decayed or abscessed teeth removed a contributory factor in many diseases, and also true that many diseases can be traced directly to mouth infection. Nonvital teeth should not be unconditionally removed, for the loss of the capacity of proper mastication of the food involves a greater danger than that arising from a correctly treated dead tooth. It is doubtful, moreover, whether all the clear areas shown by radiograms of dead teeth are abscesses, and if this is not the case such teeth should not be ruthlessly extracted. Bone-absorption may easily be produced by forcing filling-material through the end of the roots, or by drugs used in dentistry, such as creosote, oil of cloves, or carbolic acid, resulting in the production of a clear area, and it is highly probable that seventy-five per cent of such areas have been caused by such operative technic or perhaps by a defective film. When the radiogram shows a liquefaction of the tissues, it is a plain duty to open and drain, and when there is a great deal of destruction of bony tissue due to the abscess, it necessitates extraction. There are teeth that cannot be successfully operated upon, and canals that cannot be found or opened. Such teeth must be removed when they become the seat of infection.

**Giant-Cell Sarcomata of the Jaws.** L. Krebs. *Correspondenz-Blatt für Zahnärzte*, 1920, xxxvi, p. 27.

According to their histologic composition, the giant-cell sarcomata of the jaws belong to the true sarcomata, but according to their clinical course, to the benign tumors of the buccal cavity. In conformity with their localization, they have long been designated as epulides, meaning noninflammatory tumors of the gums and alveolar process. Recently, the name of epulides is essentially reserved for sarcomata and fibromata at the alveolar margin, whereas other tumors are directly designated by their pathologic name. The description of a tumor as epulis is desirably qualified by the addition of an appropriate adjective, such as sarcomatous or fibromatous epulis; the mere designation as epulis being only topographic. The giant-cell sarcomata of the jaws occupy a peculiar position on account of their benign course and the absence of metastases. The clinical picture of periosteal giant-cell sarcoma is as follows: The tumor usually appears at the margin of the gums, on the outer side of the jaw, but is occasionally lingual or palatal. The growth may be attached by a broad base or it may be pedunculated. Sometimes, the tumor grows out of the alveolus of a tooth, as the sequel of an extraction; in other cases, it is situated between the teeth, which it loosens through its increase in size, pushing them out of position. Impressions of the teeth are often demonstrable in the tumor as soon as it has reached sufficient size to be struck by the teeth of the opposing tier, or when it extends towards the neighboring teeth. These dental contacts result in lesions of the mucosa which may produce ulcerative disintegration of the surface. Swelling of the regional lymph glands is usually referable to this ulcerative disintegration of the mucosa. In highly vascular tissues, hemorrhages are apt to originate. The consistence is usually thick, sometimes of bony hardness, in the presence of much interspersed bone-tissue. The more vascular the tumor, the softer its consistence. The subjective disturbances are at first inconsiderable. In case of rapidly progressive growth of the tumor, the patient is hindered in chewing and talking; when the tumor is of considerable extent, it may give rise to more or less disfigurement. The ulcerated surface of the mucosa may become extremely distressing when it begins to break down and to suppurate. The shape of the tumor is usually oblong; the size varies from that of a cherry to a hen's egg; the color is brownish to reddish-brown, the latter color pointing to the presence of pigment.

The differential diagnosis between giant-cell sarcoma and other tumors is sometimes rather difficult, the following affections entering into consideration: (1) Fibroma. (2) Abscesses, due to periodontal inflammations. (3) Exostoses of the Bone. (4) Other types of sarcoma. (5) Odontoma. (6) Cysts. (7) Carcinoma. The microscopic examination is decisive. In the author's material, the lower jaw was more frequently affected than the upper (59 as compared to 66 cases). According to his statistics, the seat of predilection of the tumor is the bicuspid region; but the majority of the growths were large, extending over several teeth. The statistical findings are to the effect that the tumor preferably appears in the twentieth to fortieth year, more frequently in women than in men; it is found more often in the

lower than in the upper jaw; the sites of predilection are the bicuspid and molar region.

As in the method of treatment of giant-cell sarcoma, extensive extirpation enters into consideration. The prognosis is favorable, provided the parent soil, periosteum and bone of the alveolar process, is removed to a sufficient extent, and provided the recent cicatrix is not irritated through premature application of a prothesis. Local recurrences, frequently mentioned in the literature, are probably due in the majority of the cases to incomplete removal of all diseased tissue. In the author's material of 125 cases, recurrences were observed only in isolated instances, altogether three in number. A personal observation concerned a man 49 years of age, with a sarcoma of the left lower jaw, composed predominantly of spindle-cells and also containing giant-cells. The principal focus corresponded to the periosteum; the bone contained in the tumor was in part a remnant of the old bone, in part there was a new formation of bone. The case was accordingly one of periosteal sarcoma. The tumor was partly movable and attached by a broad base in the region of the wisdom tooth, which was removed together with the sarcoma.

**Interstitial Gingivitis or So-called Pyorrhea Alveolaris: An Incipient Form of Scurvy.** E. S. Talbot. *Journal of Clinical Medicine*, 1921, xxviii, No. 2, p. 92.

In this instructive article the author shows that interstitial gingivitis, a disease of the alveolar process and a forerunner of pyorrhea alveolaris, is far more frequent and important than is ordinarily assumed. Only about ten per cent of patients have the advanced pyorrhea stage in which pus is present, whereas everybody sooner or later has interstitial gingivitis in some degree. Being a transitory structure, the alveolar process, after the second dentition, begins to undergo absorption, as the result of the slightest irritation, or in consequence of malnutrition and metabolic changes. The peculiar situation of the alveolar process as an end-organ makes it very susceptible and sensitive to irritations and nutritional influences. Because of the transitory nature of the alveolar process, most systemic changes are first observed in the gums and the alveolar process. The disease would probably be more correctly interpreted if it were called incipient scurvy. A lowered vitality and neglect assist in the production of this disease. What is considered scurvy in many patients is only interstitial gingivitis, or the milder forms of scurvy, in which other bodily symptoms are not present and in which only the gums and alveolar process are involved, owing to their transitory nature. The author's researches have shown that interstitial gingivitis is not an infectious disease. He has shown that the alveolar process is the first structure involved in malnutrition, faulty metabolism, and scurvy-producing interstitial gingivitis. Bone-absorption takes place first; afterwards, inflammation appears. This period is always recognized by bleeding of the gums. Finally, pyorrhea alveolaris may occur. Disorders of the alveolar process should be considered as one of the most important diagnostic signs of faulty metabolism, since the alveolar process has been shown to be the first involved in systemic disturbances due



to changes in climate, high altitudes, monotony of diet, and so on. The pathology of interstitial gingivitis, or pyorrhea alveolaris, and of scurvy, is identical, and a uniform term for the disease is therefore to be desired.

**Mercurial Stomatitis.** G. Maurel. *Gazette des hôpitaux civils et militaires*, 1920, No. 80, p. 1269.

One of the most frequent modes of onset of mercurial stomatitis is represented by mesial inferior gingivitis, the process beginning at the level of dental insertion, at the neck of the middle lower incisors, then of the lateral lower incisors. The vestibular portion of the gums is usually alone involved, the lingual portion as a rule remaining intact. The teeth at this level are as if encircled below by a purplish margin consisting of the reddened and swollen gums. Digital pressure on the gums, passing towards the neck of the teeth, causes a droplet of seropurulent pus to exude under the detached border of the gums. Sometimes, extremely obstinate, painful, irregular ulcerations with a yellowish floor, are met with. The patients complain of certain irritation of the teeth, painful mastication, a peculiar metallic taste in the mouth, and the breath has a characteristic faintly sour smell. There is a lateralized or hemistomatitis in which the mercury seems to exert its action only upon one side of the mouth, while the other side remains intact. This has been shown to be due to the patient's habitually lying on the right or left side; the stagnation of the buccal fluids at this point favors and localizes the inflammation, the affected cheek is reddened, sometimes excoriated and ulcerated, the redness being accompanied by a burning sensation and some salivation. The partial forms of stomatitis include a type in which the portion of the gums in contact posteriorly with the last large lower molar, usually the wisdom tooth, is detached; the tooth becomes gumless and behind it appears a small red tapering and movable strip of tissue, constituting retromolar detachment. This lesion may be bilateral, but is very often limited to the right or left side alone. Peripheral gingivitis, another type of partial stomatitis, consists of inflammation of the gums around a carious tooth, and old root, or a fragment of crown or an old stump. Here the mercury merely increases an inflammatory process of chronic gingivitis, which has locally produced a point of lessened resistance. All these forms if neglected may pass into generalized mercurial stomatitis.

**Buccal Spirochetoses.** Kritchewski and Seguin. *La Revue de Stomatologie*, 1920, xxii, No. 11, p. 613.

The various ulcerative and necrotic affections of the mouth constitute a group of diseases in the form of buccal spirochetoses, caused by different spirochetes, usually associated with each other, their pathogenic action being increased by the fusiform bacillus. A distinction is made by the authors between three forms: *Spirocheta tenuis*; *Spirocheta Acuta*; and *Spirocheta dentium*. Although morphologically distinct, these spirochetes in association with the fusiform bacillus produce identical lesions in guinea pigs. The fusiform bacillus by itself alone is not pathogenic, but is regularly met with in

the lesions and in the immediate vicinity of the necrotic zone where the spirochetes proliferate exclusively. After the spirochetes have disappeared under the action of the arsenobenzols, which constitute the elective treatment of these affections, the nonpathogenic fusiform bacillus is rapidly destroyed by phagocytosis, and the fusospirillary association at the base of the buccal flora is annihilated at the same time. All the buccal spirochetoses are amenable to neosalvarsan, either in intravenous injections or in local applications. In obstinate cases, the two treatments are advantageously combined.

From the prophylactic viewpoint, buccal hygiene is a necessity, for aside from patients evidently suffering from acute or chronic spirochetoses, there undoubtedly exist many germ-carriers who are all liable to develop ulcerative lesions of the mouth. In addition to the ordinary brushing and cleaning of the teeth, which is of primary importance, appropriate buccal hygiene should attack these local spirochetoses at their origin. By means of the incorporation of neosalvarsan in a toothpaste, the authors have obtained a stable compound of great efficiency against these buccal spirochetes. This mouth-infection is sure to be benefited to a remarkable degree as the result of treatment with the arsenobenzols.

**Dental Clinic for South Australia.** The Medical Journal of Australia, 1920, vii, p. 508.

The South Australian Branch of the British Science Guild sent a deputation to the Minister of Education, the Honorable G. Ritchie, on May 20th, 1920, for the purpose of urging him to provide funds for the establishment of a dental clinic for school children. The urgency of the matter was argued and the Minister promised that it should receive the earnest attention of the Cabinet.

**Bucco-dental Sepsis and General Diseases.** J. Tellier. Lyon Medical, 1920, lii, No. 19, p. 813.

The onset of a large number of infectious general disturbances has been referred to the existence of infectious foci around the roots of devitalized, dead teeth, and in a more general way, to all kinds of buccal sepsis. These cases are characterized by the presence of circumscribed tissue-areas infected by pathogenic microbes. Although opinions differ as to what degree oral pathologic conditions are responsible for systemic disease, it is a well established fact that infectious foci around diseased teeth may become the starting point of numerous diseases. The prophylactic role of the modern dentist must be the careful avoidance of pulpitis, the obviation of the necessity for devitalization. Destruction of the pulp is a misfortune, all devitalized teeth constituting a menace to the organism. All possible efforts must be made to prevent the appearance of the complications of penetrating dental caries. Before planning to utilize a devitalized tooth or root for a fixed prosthesis, it is necessary to keep in mind the effects of these complications upon the entire organism. Radiography is a very valuable diagnostic adjuvant, and

pictures should be prepared of all those maxillary regions which contain teeth actually or potentially the seat of infectious complications.

From the *therapeutic* viewpoint, it is noteworthy that the disappearance of the primary infectious foci does not always suffice to remove their secondary effects. While the infectious areas are being treated by the procedures or methods of odontologic technic, (treatment of root canals, apical resections, surgical procedures, extraction of diseased teeth or roots), the general treatment of the infectious conditions must not be omitted, an important part in this connection being played by preventive vaccinations and serum-injections. The discovery of the frequency of lesions known as alveolar abscesses and granulomata and their importance as a source of disturbances of the general health is of relatively recent date and has been brought out by means of dental radiography.

**Influence of Bucco-dental Sepsis and Periapical Infectious Foci upon the General Health.** J. Lagrange. *Revue de Stomatologie*, 1920, xxii, No. 6, p. 335.

A close relation undoubtedly exists between certain pathologic bucco-dental conditions and the rest of the body. The part played by infection of the organism, meaning microbial invasion (toxins and formed constituents) through the blood stream, is constantly gaining in importance. This chronic invasion naturally gives rise to a pathologic condition, preceded by a more or less evident disturbance of vital functions. This is the cause of the familiar lessened resistance, which is regarded as the basis of all definite microbial diseases, such as tuberculosis, or typhoid fever. This invasion of the organism by a microbial flora, the toxins of which may be extremely active, also accounts for the origin of so-called constitutional diseases, such as arthritis or gout, which according to personal observations of the author are apparently the scattered manifestations of one or more localized infections. Aside from the bucco-dental sepsis of neglected mouths, there exists a much more dangerous, because nearly always ignored, group of periapical infections, which may contaminate the blood stream during many years with injurious microorganisms. The significance of these periapical infections has been established only since the routine use of dental radiography. In either case, the path of election for the microbial invasion is not the digestive route, as is usually believed, but the circulatory route, especially as regards the periapical infections. The periapex of any tooth affected by pulpitis may be considered as infected. Absolute sterilization of teeth is practically impossible, all devitalized teeth sooner or later presenting microbial colonies at the apices. In the case of teeth with necrotic pulps, periapical infection is nearly always inevitable and constitutes the hidden foci where the blood acquires a constantly renewed supply of microorganisms and toxins. The duration of the latent period is extremely variable, almost indefinite in some cases, whereas, in others the course is rapid and complicated by neighborhood lesions, the formation of a fistula being the least among these local complications.

**Association of Dental Caries with General Affections, Especially Gout and Rheumatism, as Tested by the Sulphocyanide Content of the Saliva.**

Levy (Berlin). *Zahnärztliche Rundschau*, March 29, xxx, 13.

The author's serial article, which closes in this number, terminates with the following conclusions: a marked degree of caries and rheumatism are almost without exception associated together, while between caries and gout there is no demonstrable connection. In pronounced caries the sulphocyanide content of the saliva is notably reduced, and this status is also found in rheumatism and chronic arthritis in general. In typical gout on the other hand the reaction for sulphocyanide is positive. This research of the saliva can give information concerning disturbed metabolism and can also assist in the differentiation of gout from other forms of chronic arthritis. To consider the rheumatism and caries association in more detail the author points out that in nearly 100 per cent of the rheumatic individuals examined caries was so marked as to interfere seriously with mastication. The diminished content of sulphocyanide is at present beyond explanation. In some of the chronic arthritides there is an infected condition of the organism which argues for metabolic disturbances, but on the other hand buccal infection may have originally been responsible for these arthritides. Finally in many cases there is no evidence of infection of any kind, and we are forced to assume the existence of some inborn constitutional inferiority. We can only state that defective sulphocyanide production indicates lowered resistance to disease.

**A Microscopical Study of Pulps From Infected Teeth.** Henrici and Hartzell (Minneapolis). *The Journal of Dental Research*, December, 1920, ii, 4.

The authors found active inflammation in fourteen pulps from forty-one infected teeth or 37 per cent—ample confirmation of the opinion previously arrived at from bacteriologic studies that the pulp may be invaded by microorganisms long before it is actually exposed to caries, and may be repeatedly injured long before it actually undergoes necrosis. The research was undertaken to test the validity of the opinion commonly held that an intact wall of dentin protects the pulp from infection, so that only caries or a trauma can make it possible for microorganisms to gain access to the pulp. Connected with this belief is the opinion that pain occurring previous to actual exposure of the pulp must be attributed to the presence either of temperature change or of lactic acid absorbed through the dentinal tubules, these two factors producing pain through the induced hyperemia. The authors have long held the opposed belief that microorganisms can invade the pulp in the absence of caries or before the latter has progressed. The invading organisms, however, do not, in the authors' opinion, set up suppurative or gangrenous processes but instead a granulomatous condition which ends in fibrosis. These alterations naturally pave the way for ordinary infectious processes. In the research to uphold or controvert this belief, the authors made studies of fifty vital teeth and the results which are stated in the opening paragraph of the abstract appear to bear out their views.



**Diseased Pulps of Teeth in Relation to Sequelæ.** C. J. Grieves (Baltimore).  
The Journal of the National Dental Association, April, 1921, viii, 4.

The author comes to certain conclusions in reference to carious teeth with infected pulps. In chronic pulpitis, pulp degeneration and gangrene complete destruction of the subgingival odontoblasts and fibrillæ takes place so slowly that this layer of cells, vitally attached to the pulpal wall, often persists in any kind of pulp disease. It guards the apical third of the dentin, possibly transmitting sensation, for the latter often persists and indicates a vital apex. Pulpal infection is usually localized centrally and excepting the initial lesion—the carious exposure—it follows the large vessels and perivascular lymphatics centrally through the pulp, leaving tissues adjacent to dentin and cementum intact for some time. This pathway in fact is more accessible for the production of periapical disease than a general infection of the apex. The presence of nerves under such pulp conditions sufficiently intact to record pain denotes a persistent vascularity. The common resistance to arsenic, cocain and other medicaments offered by many stages of chronic ulcerating and granulating pulpitis is hopeful and indicates activity of Nature's usual granulation methods for protecting the apex and contained vessels against infection. The author mentions that over fifty per cent of teeth are free from periapical infection and seeks to determine how much of this large fraction is due to canal medication and pulp removal methods of the past, and to what extent this fraction can be increased in the future. He appears to believe that the use of germicides applied directly to the pulp has prevented many apex infections and that through the progress of modern technic the proportion thus saved is bound to increase.

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## EDITORIALS

### The Pre-Dental Year in Dental Education

FOR some time there has been considerable discussion over the advisability of adding one year of college work as a requirement to enter dental school. As a result of this agitation, a number of schools, some of their own volition and others because of changes in dental laws, will begin the course of 1921 with one year of college work as a requirement for admission to dental college. We believe this is a great mistake, because the four year dental course has not been worked out to the satisfaction of many. Until dental colleges have had time to fully test the value of the four year course, the addition of one year of college work as a requirement is also more or less of an experiment. In the first place, we fail to see how one year of college work is going to be of any benefit in the study of dentistry. A student who has graduated from High School, has a sufficient knowledge of all collateral subjects to enable him to study dentistry with a degree of intelligence. It is a recognized fact that the first year in

college is a year wasted by the majority of students. It takes one year before the average college student is able to find himself and to become accustomed to his surroundings so that he can do creditable work. Therefore it seems that this year of college work, which will be required by some schools for admission to dental college is a year of time absolutely lost.

Under the present conditions with the four year dental course, a student finds the time is long enough at best which is required to complete an education. The addition of the extra year simply means a loss of time to the student, an economical loss to the community, because this is one more year the student is not a producer. Therefore from an economic view point, the addition of one year of college work is wrong.

At the present time the number of men in the dental profession is not sufficient to take care of the needs of the public. With the addition of one year of college work, there will be a diminished number of men studying dentistry, with the result that there will not be enough men in a few years to take care of the public. As this fact becomes recognized there is a possibility that legislative bodies will so change the dental laws, as to allow anyone to practice dentistry regardless of the high requirements that have been set up by certain schools. This is more than possible as proved by the fact that one state has already so changed the medical laws that a graduate of any medical college, regardless of the standing that college has, will be permitted to practice. A few years ago because of the attitude which a certain state took in regard to educational matters, the State Board was revoked by the Legislative body and the dental profession of that state was thrown wide open.

It must be remembered that the great function of the dental profession is to serve the public, and whenever educational requirements are so raised by a number of enthusiasts, as to destroy the usefulness of the profession, the question of education will be taken out of the hands of a few and regulated by the masses which regulations will be detrimental to high ideals.

Another phase of the subject is the fact that the majority of men who are advocating one year of college work as a requirement for admission to dental schools, are men who are connected with Universities. This seems to be a move on the part of the so-called "University School" to establish such conditions as will render continuation of dental schools not affiliated with universities impossible. In fact under present conditions, very few universities, except those who have dental departments, are willing to give a student one year of college work, knowing that he will switch to dentistry at the end of that year. Therefore, certain dental colleges are being discriminated against by men who advocate one year of college work.

High requirements in dental schools are desirable up to a certain degree, but as soon as those requirements begin to react against the efficiency of dental education, then it is time to stop and consider the real motive. In considering this question, we believe that some of the men who advocate the extra college year are doing so because of selfish motives, believing that it will enable them to further control dental education, and they do not have the interest of the public or profession at heart.

## ORTHODONTIC NEWS AND NOTES

The editors desire to make this department a permanent feature of the Journal, but in order to do so must have the full support of the orthodontic profession throughout the country. We would deem it a great favor if our subscribers and readers would send in such announcements as might be of interest to the profession.

### The Alumni Association of the International School of Orthodontia, Inc.

Hotel Baltimore, Kansas City, Missouri,  
July 14th and 15th, 1921

#### PROGRAM

*Thursday, July 14, 1921*

- 8:30 A.M.—Registration.
- 9:00 A.M.—President's Address, F. O. Gorman, D.D.S., San Antonio, Texas. "The Effect of Orthodontic Treatment Upon the Blood," W. E. Stoff, D.D.S., Omaha, Neb. "Possibilities of Prevention in Orthodontia," C. M. McCauley, A.B., D.D.S., Dallas, Texas.
- 1:30 P.M.—"The Relation of Malocclusion and Orthodontics to General Health," C. W. Bruner, D.D.S., Waterloo, Ia. "Radiodontic Examinations in Orthodontia," Clarence O. Simpson, M.D., D.D.S., Saint Louis, Mo. "Appliances," J. E. Taylor, D.D.S., Manhattan, Kans.
- 7:30 P.M.—"Vitamines," J. B. Wood, M.D., Kansas City, Mo. "Clinical Report on Experiments with Vitamines," Dr. Harry A. Allshouse, Jr., Kansas City, Mo. "Carborundum Treatment in Orthodontia," W. J. Brady, D.D.S., Kansas City, Mo.

*Friday, July 15, 1921*

- 9:00 A.M.—"Some Phases of Orthodontia" (with illustrations), L. R. Sattler, D. D. S., Omaha, Neb. "Some Principles Dealing with Cleft Palate and Harelip," Wm. Lete Shearer, B.S., M.D., D.D.S., Omaha, Neb. "Tie-douloureux," Harold P. Kuhn, A.B., M.D., F.A.C.S., Kansas City, Mo. "Malnutrition and Lack of Function as Important Causes of Malocclusion," S. E. Johnston, Ph.G. D.D.S., Kansas City, Mo.

#### CLINICS

- 1:30 P.M.—(1). "An All-closed Attachment for the Lingual Arch," W. A. McCarter, Topeka, Kans.
- (2) "Combination Lingual and Labial Arches, 21 and 22-gauge Tene Las," Hugh Grun Tanzey, D.D.S., Kansas City, Mo.
- (3) "Possibilities of Spring Attachments to Both Labial and Lingual Appliances," Milton Jones, D.D.S., Wichita, Kans.
- (4) "Appliances," (paper and clinic), J. E. Taylor, D.D.S., Manhattan, Kan.
- (5) "Clasp for Lingual Arch Attachment," Samuel E. Johnston, D.D.S., Kansas City, Mo.
- (6) "Retaining Appliances—Their Purposes and Possibilities," (paper and clinic), Homer A. Potter, Jr., D.D.S., Kansas City, Mo.
- (7) "Models and Appliances with Records Showing Results Obtained in the Treatment of Malocclusion," Harry A. Allshouse, Jr., D.D.S., Kansas City, Mo.
- (8) "Subject to be announced," T. W. Sorrels, D.D.S., Oklahoma City, Okla.
- (9) "The Oliver Model Trimmer," "Model Records," Bertha McNutt, Kansas City, Mo.
- (10) "Subject to be announced," Atler B. Conly, D.D.S., Dallas, Tex.
- (11) Some cases being treated at I. S. O. Clinic.
- 4:00 P.M.—"The Development of Structures of Face and Head," (Illustrated with crayon.) R. D. Irland, A.B., M.D., F.A.C.S., Kansas City, Mo.
- 7:00 P.M.—Alumni Banquet.



**A Bust of Morton for the Hall of Fame—Send Your Contribution Now**

In the election of Dr. Wm. T. G. Morton to the Hall of Fame the allied professions of medicine and dentistry have been singularly honored. By their overwhelming vote the electors have also evidenced the appreciation of the public at large for the beneficence of anesthesia.

Recently, at the Annual Dinner of the American Anesthetists in Boston during A. M. A. Week, Dr. S. Adolphus Knopf, the elector most responsible for the honoring of Morton, said it would be a proud privilege for the Associated Anesthetists to place a bronze bust of Morton in the niche assigned him by the electors. This is to be done in celebration of the Diamond Jubilee Anniversary of Morton's Demonstration of Ether Anesthesia.

The Associated Anesthetists, as well as other prominent leaders of the allied professions, are, therefore, urging all those interested to make substantial contribution for this purpose.

Send your check or money order at once to F. H. McMechan, M.D., Sec'y-Treas., Associated Anesthetists, Lake Shore Road, Avon Lake, Ohio.

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**Dental Corps to Have Orthodontists**

War Department orders, recently issued, direct Majors B. C. Warfield, L. C. Fairbank and Neal A. Harper, Dental Corps, to report at New York City for temporary duty to take the postgraduate course of instruction at the Dewey School of Orthodontia, beginning June 20th, upon completion of which they will return to their proper stations.

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**Notes of Interest**

Drs. Sattler and Stoft announce the removal of their offices to 900-904 First National Bank Building, Omaha. Practice limited to orthodontia and dental x-ray.

Drs. Robert R. Bosworth, Frederick F. Molt, Arthur E. Smith, and Howard C. Miller announce their association in the practice of oral surgery, extraction of teeth, and radiography, Marshall Field Annex, Chicago, Ill.

Dr. S. C. Wheat, Orthodontist, announces the removal of his office, 202 McMillen Building, to 417 Bonfils Building, 10th and Walnut Streets, Kansas City, Mo.